

THE ORIENTAL TIPULIDAE IN THE COLLECTION OF THE INDIAN MUSEUM. PART II.

By CHARLES P. ALEXANDER,
Amherst, Massachusetts, U. S. A.

(Contribution from the Entomological Laboratory, Massachusetts State College.)

The preceding part under this general title was published in the *Records of the Indian Museum* XXIX, pp. 167-214, 1927. In the present instalment I wish to continue the study of the extensive series of Tipulidae received during the intervening years through the various authorities in charge of the Zoological Survey of India. My deepest thanks and appreciation are herewith extended to Dr. B. N. Chopra, Dr. Hem Singh Pruthi, Dr. Baini Prashad, Lt.-Col. R. B. S. Sewell and Dr. H. A. Hafiz. It is the friendly interest of these men, and of the entomologists of the Indian Museum, that has so advanced our knowledge of this neglected group of flies in British India. The types and uniques will be returned to the Indian Museum; besides these materials, I have included two species received from other sources, but paratypes of both of these will be added to the Museum collection.

During the course of the past several years I have been particularly privileged to have had sent to me in America the type-specimens of certain of the Brunetti Tipulidae whose strict identity remained in question. Most of such as are discussed in the present paper belong to the vast genus *Tipula* and particularly to those species having marmorate wings, considered by Brunetti to be very closely inter-related and to be virtually unkeyable but now known to belong to sections and subgenera different from one another and all clearly definable. In the present paper, re-descriptions of several of these doubtful species are given, these including *Tipula* (*Acutipula*) *princeps* Brunetti, *T* (*Vestiplex*) *himalayensis* Brunetti, *T* (*V.*) *quasimarmoratipennis* Brunetti, *T* (*V.*) *subtincta* Brunetti, *T* (*Sinotipula*) *tessellatipennis* Brunetti, *T* (*Oreomyza*) *striatipennis* Brunetti and *T* (*Lunatipula*) *marmoratipennis* Brunetti.

PREOCCUPIED NAMES.

A considerable number of names in Tipulidae have been found to be pre-occupied by earlier names in the same genus and substitutes for such homonyms are proposed herewith. My thanks are due to Dr. Alan Stone, of the United States National Museum, for calling to my attention certain of these preoccupied names.

Ctenacroscelis cerbereanus, nom. nov., for *Ctenacroscelis fumipennis* Brunetti; *Tipula fumipennis* Brunetti, *Rec. Ind. Mus.* VI, p. 250, 1911; nec *Tipula fumipennis* Hudson, *Manual New Zealand Ent.*, p. 48, 1892.

Tipula praeses, nom. nov., for *Tipula fumipennis* Alexander, *Ann. Ent. Soc. Amer.* V, pp. 359, 360, 1912; nec *Tipula fumipennis* Hudson, *Manual New Zealand Ent.*, p. 48, 1892; nec *Tipula fumipennis* Brunetti, *Rec. Ind. Mus.* VI, p. 250, 1911.

- Tipula lombokensis*, nom. nov., for *Tipula cinerea* Brunetti, *Rec. Ind. Mus.* VI, p. 252, 1911; XV, p. 274, 1918; nec *Tipula cinerea* Fabricius, *Spec. Ins.* II, p. 405, 1781; nec *Tipula cinerea* Strobl, *Mittheil. Naturwiss. Ver. Steirmark* for 1894, p. 207, 1895.
- Tipula serrulifera*, nom. nov., for *Tipula serrulata* Lackschewitz, *Proc. R. Ent. Soc. London* (B) V, p. 110, 1936; Edwards, *Ent. Mon. Mag.* LXXV, p. 242, 1939; nec *Tipula serrulata* Loew, *Berl. Ent. Zeitschr.* VIII, p. 58, 1864.
- Limonia* (*Limonia*) *flagellaris*, nom. nov., for *Limonia flagellata* Alexander, *Bornstein-forschungen* II, pp. 38, 39, 1931; nec *Limonia* (*Limonia*) *flagellata* Edwards, *Journ. Fed. Malay States Mus.* XIV, pp. 68, 69, 1928.
- Limonia* (*Rhipidia*) *productina*, nom. nov., for *Limonia* (*Rhipidia*) *rostrifera* Edwards, *Ann. Mag. Nat. Hist.* (8) XVII, pp. 352, 353, 1916; nec *Limonia* (*Dicranomyia*) *rostrifera* Osten Sacken, *Mon. Dipt. N. Amer.* IV, p. 65, 1869.
- Limonia* (*Libnotes*) *diaphana*, nom. nov., for *Limonia* (*Libnotes*) *lutea* Edwards, *Ann. Mag. Nat. Hist.* (8) XVII, p. 357, 1916; nec *Limonia* (*Dicranomyia*) *lutea* Meigen, *Klass.* I, p. 55, 1804.
- Limonia* (*Libnotes*) *buruicola*, nom. nov., for *Limonia* (*Libnotes*) *subcostalis* Edwards, *Treubia* VII, pp. 138, 139, 1926; nec *Limonia* (*Rhipidia*) *subcostalis* Alexander, *Proc. U. S. Nat. Mus.* LX, pp. 3, 4, 1922.
- Limonia* (*Libnotes*) *depicta*, nom. nov., for *Limonia* (*Libnotes*) *affinis* de Meijere, *Nova Guinea* IX, p. 308, 1913; nec *Limonia* (*Dicranomyia*) *affinis* Schummel, *Beitr. zur Entomol.* I, p. 127, 1829.
- Limonia* (*Libnotes*) *musculicola*, nom. nov., for *Limonia* (*Libnotes*) *sphagnicola* Edwards, *Treubia* VII, p. 138, 1926; nec *Limonia* (*Dicranomyia*) *sphagnicola* Alexander, *Proc. Boston Soc. Nat. Hist.* V, pp. 173, 174, 1925.
- Limonia* (*Libnotes*) *palaeta*, nom. nov., for *Limonia* (*Libnotes*) *punctipennis* de Meijere, *Tijd. voor Ent.* LIV, p. 35, 1911; nec *Limonia* (*Dicranomyia*) *punctipennis* Skuse, *Proc. Linn. Soc. N. S. W.* (2) IV, p. 761, 1890.
- Limonia* (*Libnotes*) *solicita*, nom. nov., for *Limonia* (*Libnotes*) *tripunctata* de Meijere, *Bijd. tot de Dierkunde*, Feest-nummer, p. 14, 1919; nec *Limonia* (*Limonia*) *tripunctata* Fabricius, *Spec. Ins.* II, p. 405, 1781.
- Limonia* (*Dapanoptera*) *candidata*, nom. nov., for *Limonia* (*Dapanoptera*) *pallida* de Meijere, *Nova Guinea* IX, p. 307, 1913; nec *Limonia* (*Dicranomyia*) *pallida* Macquart, *Dipt. exot.* I, pt. 1, p. 72, 1838; nec *Limonia* (*Geranomyia*) *pallida* Williston, *Trans. Ent. Soc. London*, p. 284, 1896.
- Limonia* (*Dapanoptera*) *meijereana*, nom. nov., for *Limonia* (*Dapanoptera*) *pulchra* de Meijere, *Tijd. voor Ent.* LVIII, p. 103, 1915; nec *Limonia* (*Rhipidia*) *pulchra* de Meijere, *Bijd. tot de Dierkunde* XVII, p. 91, 1904.

Gonomyia (*Lipophleps*) *calverti pleurotaenjata*, nom. nov., for *Gonomyia* (*Lipophleps*) *calverti pleurostriata* Alexander, *Rev. de Entomol.* X, p. 627, 1939; nec *Gonomyia* (*Gonomyia*) *nigrodorsata pleurostriata* Alexander, *Proc. Linn. Soc. N. S. W.* LXI, p. 30, 1936.

Molophilus (*Molophilus*) *tetrodonta*, nom. nov., for *Molophilus tetracanthus* Alexander, *Proc. Linn. Soc. N. S. W.* LIX, p. 183, 1934; nec *Molophilus tetracanthus* Alexander, *Dipt. Patagonia & S. Chile* I, p. 203, 1929.

Toxorhina (*Toxorhina*) *infumipennis*, nom. nov., for *Toxorhina* (*Toxorhina*) *fumipennis* Alexander, *Puerto Rico Univ. Journ. Agric.* XXIII, p. 100, 1939; nec *Toxorhina* (*Ceratocheilus*) *fumipennis* Alexander, *Proc. Linn. Soc. N. S. W.* LXI, p. 337, 1936.

ENRICO BRUNETTI AND FRED. WALLACE EDWARDS.

The death of Frederick Wallace Edwards on November 15, 1940, at the untimely age of 51, was an incalculable loss to Dipterology. This sad occurrence recalls to mind some of the relations that existed between Edwards and the foremost worker on the Indian Diptera, the late Enrico Brunetti.

As has been indicated by the Director, Dr. Bains Prashad and Dr. Ronald Senior-White in their joint obituary account of Brunetti (*Rec. Ind. Mus.* XXIX, pp. 287-296, 1927), this pioneer worker on the Dipterous fauna of British India, from the date of his first arrival in India in 1904 until his permanent removal from the country in May 1921, had worked at the Indian Museum for irregular periods only and very much of his work at the Museum had been gratuitous. As a partial result, the extensive collections that were made by Brunetti himself were, in some cases, the property of the Museum but in many other instances became the personal property of Brunetti and these latter were eventually bequeathed by him to the British Museum (Natural History), London. The end result of this arrangement was that a considerable proportion of the Brunetti types are preserved in the Indian Museum while the somewhat comparable balance is in London.

The difficulties under which Brunetti worked while in India have been detailed by others. It is certain that his work was of a pioneer nature and that vast chaos existed when he first began his investigation of the Indian Dipterous fauna in 1904. Certain of Brunetti's works are models of study and application, as for example, his "Catalogue of Oriental and South Asiatic Nemocera", *Rec. Ind. Mus.* XVII, pp. 1-300, 1920. As concerns his strictly taxonomic work, however, the fact cannot be ignored that throughout his work on the Tipulidae, at least, a considerable number of partly incredible errors have crept in and many of the assignments of species to genera are entirely erroneous. It is here that the almost incredibly accurate taxonomic eye of Edwards came in to unravel what otherwise must have become an almost unsolvable mystery. In a letter from Edwards to the writer, dated February 16, 1923, he writes: "For the last week or so I have been working with Brunetti at his Tip. types. There have been a good

many disappointments, because in very many cases it is not the actual types which he has brought, but only specimens from his series, and as these were picked out and labelled hastily, it is evident he has made a lot of mistakes in determining his own species. Many of those he has brought do not agree with his descriptions, as he himself admits when I point it out to him. Still he has brought quite a large number of the actual types and we have been able to get a great deal of useful information from them. One surprise to both of us was that in three cases he had omitted to notice that a species possessed white tarsi, and other serious omissions in his descriptions are frequent. Many of his generic references are utterly and sometimes unaccountably wrong. I shall try to get him to write up the results of this critical study when we have finished. It would be rather a tall order for me to make so many corrections of someone else's work and I think he ought to do it himself as a penance."

It is certain that of all persons who have ever concerned themselves with the Oriental Tipulidae, Edwards possessed the fullest knowledge of the subject. His placing in synonymy of many of the Brunetti species may strike some as being drastic but it should never be lost sight of that combined with his unparalleled knowledge of the group, he was the only student who had such an opportunity to see so many of Brunetti's actual types and authentically named specimens. The fact that part of these types are in Calcutta and part in London has made it virtually impossible for any other worker to examine all of this material. Edwards' treatment of the Oriental Tipulidae and his systematic arrangement of the species, with his synonymy, should be followed by all future workers and it seems to the present writer that if errors have crept into this revisional work, such must be few and far between.

In concluding these brief remarks concerning some of the relations existing between Edwards and Brunetti, one further point of interest may be noted. Edwards joined the staff of the British Museum (Natural History) on November 24, 1910. It was shortly before this date that he became engaged to be married (to Miss Florence Mary Williams, of Shelford, Cambridge) and, almost coincidentally, was offered an appointment as Entomologist to the Indian Museum, a position later filled by Dr. Stanley W. Kemp. Family objections to his moving to India caused Edwards to give up the idea. One cannot but wonder what the present status of our knowledge of the Diptera of British India might have been had Edwards removed to India in 1910 and devoted his remaining years and unsurpassed talents to a study of the subject.

Subfamily *TIPULINAE*.

***Ctenacroscelis dravidicus* Edwards.**

1932. *Ctenacroscelis dravidicus*, Edwards, *Stylops* I, p. 146.

The type, 1 ♀ was from Kodaikanal, Shola, in the Palni Hills, September 15, 1921 (T. B. Fletcher). One further female in the Indian Museum from the type-locality, altitude 6,700-7,000 feet, August 1922 (S. W. Kemp).

Ctenacroscelis pallifrons Edwards.

1932. *Ctenacroscelis pallifrons*, Edwards, *Stylops* I, p. 147.

The type, 1 ♂ Regd. No. 3973/H1, was from Pashok, Darjiling District, Eastern Himalayas, May 26-June 14, 1916 (F. H. Gravely). One further male from the same locality, Pashok Spur (R. S. Lister).

Ctenacroscelis dives (Brunetti).

1912. *Tipula dives*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 307, 308.

The type, a unique ♂ Regd. No. 2394/20, was from Kurseong, June 23, 1910 (N. Annandale). The following re-description of this type is given.

Male.—Length about 25 mm.; wing 32.5 mm.

Nasus reduced to a mere stub. Frontal prolongation of head dark liver brown. Antennae apparently only 11-segmented; first flagellar segment long-cylindrical, the second segment about two-thirds this length; fourth to sixth segments with the lower face conspicuously protuberant and densely covered with a microscopic grey pubescence; on the succeeding segments the ventral face is less protuberant but densely pubescent; terminal segment elongate, nearly twice the penultimate, narrowed gradually to the tip, apparently formed of two segments. Head behind greyish, the front and anterior vertex more yellow.

Mesonotal praescutum dark reddish brown, the four dark olive brown stripes narrowly margined by still darker brown, restricting the interspaces to narrow lines; scutum rich brown, each lobe with two olive green areas which have a darker narrow border; scutellum and mediotergite black, heavily pruinose. Dorso-pleural region with a conspicuous orange yellow stripe, beneath which is a broad brown longitudinal stripe that is darkest along the dorsal margin, paling ventrally, the ventral pleurites more olive brown; posterior pleurites and pleurotergite clearer yellow. Legs with the coxae pale, sparsely pruinose, the base of fore coxae narrowly darkened; femora yellow, the tips broadly dark brown; tibiae and first two tarsal segments narrowly tipped with brown; terminal tarsal segments darkened; claws slender, each with a basal lobe or shoulder. Halteres dark brown, the base of stem narrowly yellow. Wings with a strong yellowish brown tinge, the cubital and anal cells somewhat paler; conspicuous darker brown seams along posterior cord, Cu_1 , 2nd A , and somewhat less distinctly on the veins beyond cord. Venation: Vein R_1 , approximately its own length before the fork of R_{1+2} and R_3 , thus forming a fusion of veins R_{1+2+3} ; R_{1+2} straight, slightly furcate at apex in both wings.

Abdomen brownish black, the hypopygium conspicuously paler. Male hypopygium with the ninth tergite long and depressed, the median notch deep and narrow. Outer dististyle nearly smooth, pruinose. broad at base, narrowed to the obtuse apex.

Ctenacroscelis flavoides (Brunetti).

1918. *Tipula flavoides*, Brunetti, *Rec. Ind. Mus.* XV, p. 267.

The types, 1 ♂, Regd. No. 3935/H2, 2 ♀♀, Regd. Nos. 3936-37/H2, were from above Tura, Garo Hills, Assam, altitude 3,500-3,900 feet, September 1917 (Mrs. S. W. Kemp). The following re-description of the types is given.

Male.—Length about 28 mm. ; wing 33 mm.

General colouration of head and thorax deep orange yellow, the praescutal interspaces somewhat darker. Antennae with the scape orange, the pedicel brown; flagellum black; first flagellar segment a little longer than the second, both cylindrical; third flagellar segment a trifle bulging beneath; succeeding segments shorter and conspicuously protuberant on lower face. Legs with femora yellowish brown, the tips darkened; tibiae and tarsi darker brown. Wings relatively long and narrow. Venation about as usual in the genus; R_1 distinctly before fork of R_{1+2} and R_3 , forming a fusion of R_{1+2+3} . Abdomen relatively slender, dark velvety brown, including the hypopygium. Male hypopygium as described by Brunetti, the ninth tergite squarely truncated across caudal margin, not at all bilobed, the median area of caudal margin a trifle convex, the edge fringed with long yellow setae. Outer dististyle relatively short and broad, the apex obtuse. One female, a paratype from the type-locality, has the abdomen with beautiful iridescent blue reflexions, especially basally.

Ctenacroscelis serricornis (Brunetti).

1912. *Tipula serricornis*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 309-310.

1918. *Tipula serricornis*, Brunetti, *Rec. Ind. Mus.* XV, pl. viii, fig. 4.

The types ♂, Regd. No. 2398/20, ♀, Regd. No. 2399/20, were from Naini Tal, Western Himalayas, May and June 1893, originally from the Lucknow Museum, now in the Indian Museum. The following re-description of the types is given.

Male.—Length about 24.5 mm. ; wing 29 mm.

Female.—Length about 34 mm. ; wing 33 mm.

Frontal prolongation of head relatively long, obscure yellow; nasus long and slender. Antennae with scape and pedicel obscure yellow, the flagellum more brownish yellow; flagellar segments beyond the first strongly serrate, as described and figured by Brunetti, the ventral face of flagellar segments two to ten, inclusive, produced, more evidently so on the basal segments, the outer segments more elongate, with the serrations less evident; terminal segment elongate, simple. Head pale olive; anterior vertex flat but produced cephalad between the antennal bases.

Pronotum obscure orange. Mesonotal praescutum with the stripes greenish grey, each bordered by a slightly paler line, a little more broadly so on the lateral stripes; intermediate stripes separated by a slightly darker capillary vitta; posterior interspaces darker than the remainder of the ground colour. Pleura striped longitudinally with reddish brown

and buffy yellow, the former appearing as a longitudinal stripe extending from the cervical sclerites, crossing the ventral anepisternum onto the pteropleurite where it is much narrower. Legs with the femora brown, the outer half gradually darkened; tibiae and basal segments of tarsi somewhat brighter; femoral comb with slender teeth; tibial spurs slender. Wings with a pale brownish tinge, the small stigma a trifle darker brown; radial vein in the prearcular region greatly incrassated, dark brown. Venation (text-fig. 1b): Sc_1 preserved as a



TEXT-FIG. 1.—*Ctenacroscelis serricornis* (Brunetti), type; a., details of male hypopygium; b., venation.

stout spur that does not reach costa; free tip of Sc_2 long; R_1 with macrotrichia, uniting with R_{2+3} at the fork; vein R_{1+2} entirely preserved; vein R_3 strongly arcuated, closely approximated to the sinuous R_{4+5} , strongly narrowing the cell at near midlength; cell M_1 sessile or extremely short-petiolate; cell 1st M_2 correspondingly large, m being long and oblique.

Abdomen with the basal segments relatively bright fulvous orange, the basal tergite and extreme base of the second with a brown sublateral stripe; subterminal segments (segments seven to nine, with the caudal half of six) dark brown, pruinose; sternites similar, less darkened outwardly, the median region pruinose. Male hypopygium not incrassated, relatively short. Ninth tergite (text-fig. 1a, 9t) short, the caudal margin with a broad flattened lobe on either side, the apices obliquely obtuse, the median notch very narrow; lateral lobes densely provided with short adpressed brown setae. Basistyle and sternite produced caudad beyond the level of the tergite, as in the genus. Outer dististyle flattened, broadest at the base, gradually narrowed to the obtuse tip. Ninth sternite with a very acute V-shaped notch, the margins sparsely fringed with short setae. Eighth sternite unarmed.

Female. Generally similar to the male. Antennae with flagellar segments similarly produced but the serrations a little less distinct. Praescutal stripes darker olive brown. Ovipositor with the valves of moderate length only, the tergal valves slender, straight; sternal valves flattened, their tips acute.

The flagellar pectinations are more accentuated than in most other species of *Ctenacroscelis* but in other respects the species conforms well to the essential characters of the genus.

Tipula (Sinotipula) tessellatipennis Brunetti.

1912. *Tipula tessellatipennis*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 317, 318, pl. v, fig. 12 (wing).

The types ♂, Regd. No. 2423/20, ♀, Regd. No. 2424/20, were from Naini Tal, Kumaon, Western Himalayas, May and June 1893, originally from the Lucknow Museum, now in the Indian Museum. The following re-description of the types is given.

Male.—Length about 17 mm.; wing 19 mm.

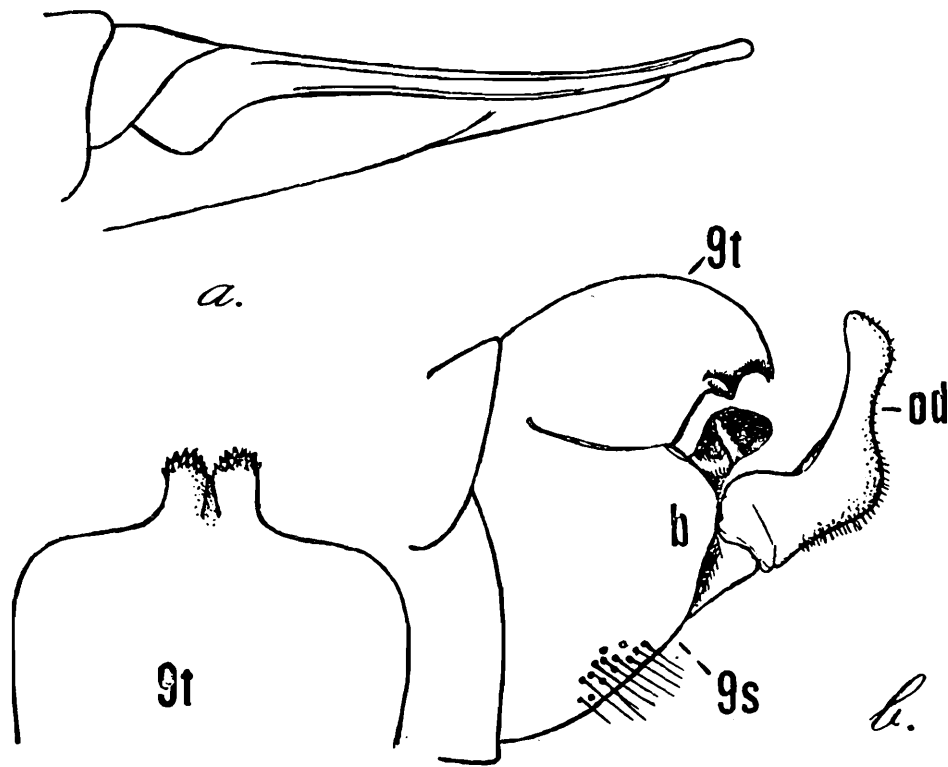
Female.—Length about 25 mm.; wing 22 mm.

Male. Frontal prolongation of head elongate, pale brownish ochreous; nasus short and stout; palpi dark brown. Antennae short, if bent backward scarcely attaining the wing-root; scape and pedicel yellow, flagellum obscure yellow, the basal enlargements of the segments dark brown; flagellar segments with basal enlargement of moderate size, the remainder of segments cylindrical or nearly so, not incised; each segment with about three elongate verticils on dorsal surface and two very short stout ones on ventral face. Head pale grey, with a relatively broad, pale brown, median vitta, a little expanded in front on the low vertical tubercle.

Mesonotal praescutum clear light grey, with four brown stripes, the intermediate pair more olive brown, almost confluent, separated only by their narrow darker brown margins; all praescutal stripes bordered by darker brown; lateral stripes with the mesal border very broad, including approximately one-half the entire width of stripe; besides the four primary stripes, the grey ground colour is invaded by paler brown areas that include the centres of the interspaces, the humeral region and the broad lateral borders; the clear grey ground is thus restricted to narrow borders to the darker stripes; scutum light grey, each lobe with olive brown areas, the larger one behind; scutellum brown, pruinose; mediotergite relatively short, grey, with a conspicuous median brown line that is not mentioned in the original diagnosis. Pleura clear grey, the dorso-pleural membrane more buffy. Halteres relatively short, brown, the knob a little darker, with its base slightly yellow. Legs with the coxae light grey; femora brownish yellow, the tips rather narrowly but conspicuously dark brown; tibiae obscure yellow, the tips narrowly dark brown; basitarsi obscure brownish yellow, soon passing into dark brown, concolorous with remainder of tarsi. Wings pale brown, tessellated with darker brown and cream coloured areas, as figured by Brunetti (*loc. cit.*). Venation: R_2 very short; R_{1+2} very pale, entirely without macrotrichia, not more than two-thirds as long as R_1 .

Abdominal tergites dark reddish brown, the basal tergites very slightly pruinose; segments four and five with a blackened median spot; a broad conspicuous sublateral black line on either side, extending from segment two to the end of segment five, the lateral margins of the segments narrowly buffy; sternites dark greyish brown, the caudal margins of the segments vaguely more reddish; subterminal segments, with the hypopygium, reddish brown. Male hypopygium (text-fig. 2b) relatively small, the tergite separate from the sternite except on the cephalic fifth. Ninth tergite, $9t$, a transversely subquadrate

plate, gently convex, the caudal margin truncated, with a small cylindrical lobule on either side of the median line, these connate on their



TEXT-FIG. 2.—*Tipula* (*Sinotipula*) *tessellatipennis* Brunetti, types: a., ovipositor; b., details of male hypopygium.

basal halves, the tips free and set with microscopic blackened spicules. Viewed from the side, these submedian lobes are strongly decurved, bifid at tips. Basistyle small. Outer dististyle, *od*, elongate, simple in structure, the basal half stouter, the distal half or less more slender. Inner dististyle very small and simple in structure. Eighth sternite unarmed.

Female. Generally similar to the male in most respects. Abdominal tergites one to four obscure yellow, the first a trifle more pruinose; succeeding tergites darker; all tergites with a broad, darker brown, sublateral stripe, darker brown outwardly, margined abruptly with buffy; basal sternites orange yellow, the outer segments more greyish. Ovipositor (text-fig. 2a) with the genital shield short and inconspicuous; tergal valves long and slender, with a basal lobe; valves gently up-curved, the tips obtuse, margins smooth.

***Tipula* (*Acutipula*) *princeps* Brunetti.**

1912. *Tipula princeps*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 306, 307.

1924. *Tipula princeps*, Edwards, *Rec. Ind. Mus.* XXVI, p. 305.

1932. *Tipula* (*Acutipula*) *princeps*, Edwards, *Stylops* I, p. 233.

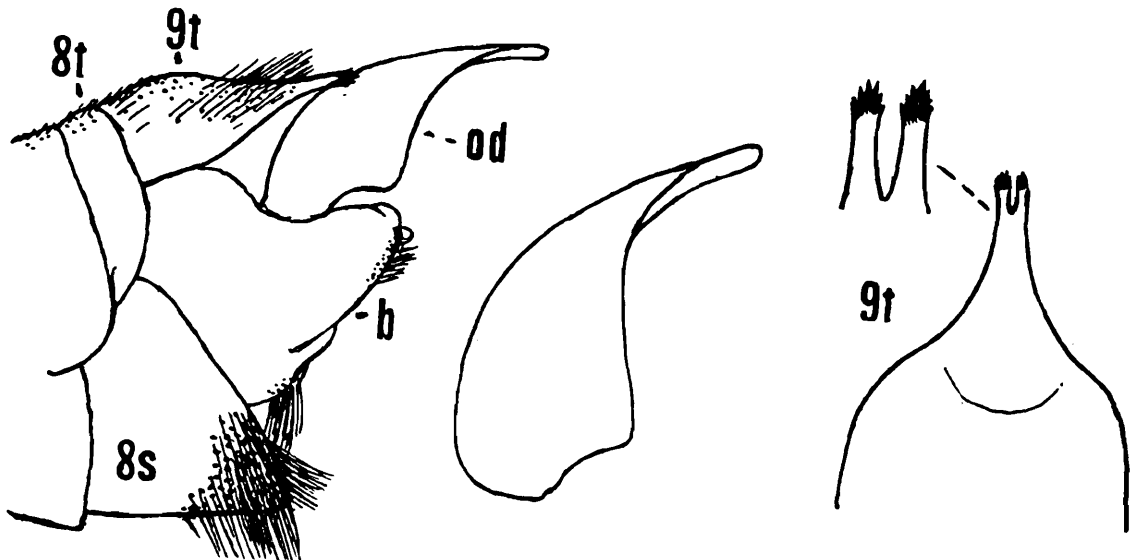
The types ♂, Regd. No. 2392/20, ♀, Regd. No. 2393/20, were from Kurseong, Eastern Himalayas, altitude 4,700-5,000 feet, June 18-19, 1910 (N. Annandale). The following re-description of the types is given.

Male.—Length about 24 mm.; wing 29 mm. Fore-leg, femur, 17.6 mm.; tibia 20.6 mm.; tarsus about 45 mm. Middle leg, femur, 19.5 mm.; tibia 18.6 mm.; tarsus about 56 mm. Hind leg, femur, 20.5 mm.; tibia 25.5 mm.; tarsus about 62 mm.

Female.—Length about 35 mm.; wing 30 mm.; abdomen 24.5 mm.

Frontal prolongation of head of moderate length, the nasus long and slender. Antennae relatively short; scape and pedicel brownish yellow; succeeding segments dark brown with the apices narrowly reddish brown, the outer segments uniformly darkened; terminal segment only about one-third the length of the penultimate and much more slender. Head brown, the posterior orbits very narrowly pale.

Mesonotal praescutum olive brown with four relatively indistinct reddish brown stripes; scutum olive brown. Pleura olive, sparsely pollinose. Pronotum and dorsopleural region orange fulvous. Halteres relatively long and slender, dark brown, the base reddish brown. Legs excessively long and slender, as shown by the above measurements; femora reddish brown, the tips infuscated; tibiae reddish brown; tarsi brown, passing into dark brown. Wings pale brown, the base and costal region more yellowish brown; stigma darker brown; a paler brown suffusion in the radial cells and as distinct spots in outer end of cell *M* and just before midlength of cell *Cu*.



TEXT-FIG. 3.—*Tipula* (*Acutipula*) *princeps* Brunetti; details of male hypopygium of type.

Abdomen reddish brown, the outer segments dark brown; a narrow dark brown lateral stripe on the tergites, beginning at the base of tergite two, widening behind, on the fifth and succeeding segments becoming confluent with the dark colour of the segment. Male hypopygium (text-fig. 3) with the ninth tergite, 9t, black, relatively tumid, the caudal margin produced into a flattened median lobe, the distal third or less of which is divided into two slender parallel lobes the tips of which are blackened and microscopically spiculate. Outer dististyle, od, widely expanded just beyond base, the outer ventral margin produced into a broadly triangular lobe, the style thence narrowed to the slender apex. Ninth sternite with a V-shaped notch in which hang two relatively stout dark brown lobes, each bearing at tip a stout brush of reddish yellow setae, these brushes decussate on the median line. Caudal margin of eighth sternite provided with a dense fringe of golden yellow setae, the sublateral ones longer.

Additional records: Eastern Himalayas, Darjiling District ♂, Regd. No. 1038/H1, ♀, Regd. No. 1039/H1, legs incomplete, Soom, June 16, 1914 (F. H. Gravely); Rakyong, May 28, 1930 (S. L. Hora).

***Tipula (Vestiplex) mitchelli* Edwards.**

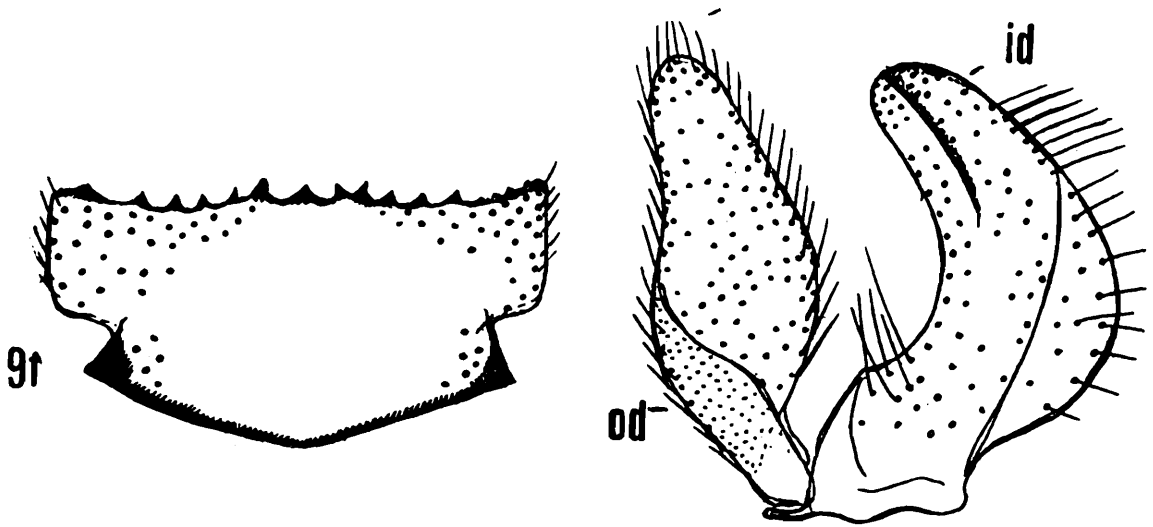
1927. *Tipula mitchelli* Edwards, *Ann. Mag. Nat. Hist.* (9) XX, pp. 229, 230.

Edwards' types were from an unknown station in Kashmir, altitude 11,000-13,000 feet, collected by F. J. Mitchell.

Additional records: Kashmir, Sonamarg, altitude about 9,000 feet, May 17-23, 1921 (Kashmir Survey); Indian Museum. Killanmarg, altitude 10,000 feet, July 19, 1923 (T. B. Fletcher); in writer's collection.

The latter specimen is a metatype received from Edwards and showing the white of the wings even more extensive than in the types, including major parts of cells *R* and *R*₁, the post-stigmal band wider, and the white areas in cells *M* and 2nd *A* even more extensive.

Male hypopygium (text-fig. 4) with the ninth tergite, *9t*, appearing as a flattened, heavily sclerotized saucer, the caudal margin and cephalic rim narrowly more blackened than the disk; caudal border almost straight but provided with a series of about a dozen denticles, including



TEXT-FIG. 4.—*Tipula (Vestiplex) mitchelli* Edwards; details of male hypopygium.

a lower median tooth and five or six sharper teeth on either side, arranged in a descending series from the submedians to the laterals; although there must be considerable variation in these teeth in different individuals, nevertheless the general arrangement as described seems to hold. The setigerous punctures of the lateral portions of the saucer are very distinct. Basistyle not produced into a spine, thus differing from most other Oriental species of the subgenus. Both dististyles relatively small and simple, the outer style, *od*, an elongate-oval pale blade, its setae pale; inner style, *id*, gently arcuated, the obtuse tip more blackened, the outer margin elevated into a high rounded compressed crest, the whole style with abundant scattered setae.

***Tipula (Vestiplex) subreposita*, sp. nov.**

Allied to *reposita*; general colouration of mesonotal praescutum grey, with four dark blackish grey stripes that are not or scarcely margined by darker; antennal scape and pedicel clear yellow, flagellar segments weakly bicoloured; a distinct dark median vitta on vertex; thoracic pleura chiefly yellow, restrictedly variegated with brown;

femora dark brown, the tips blackened, preceded by an obscure yellow subterminal ring; tibiae dark brown; wings with a weak brown ground colour, variegated by cream-coloured areas, including a post-stigmal fascia extending into the base of cell M_3 ; Rs about two and one-half times $m-cu$; abdominal tergites black, the basal segment more reddish; male hypopygium with the tergite entirely pale, the caudal margin broadly and evenly emarginate, without blackened points; basistyle produced into a very powerful spine; outer dististyle a blackened clavate blade; rostral prolongation of inner dististyle narrow, before apex with an acute spinous point.

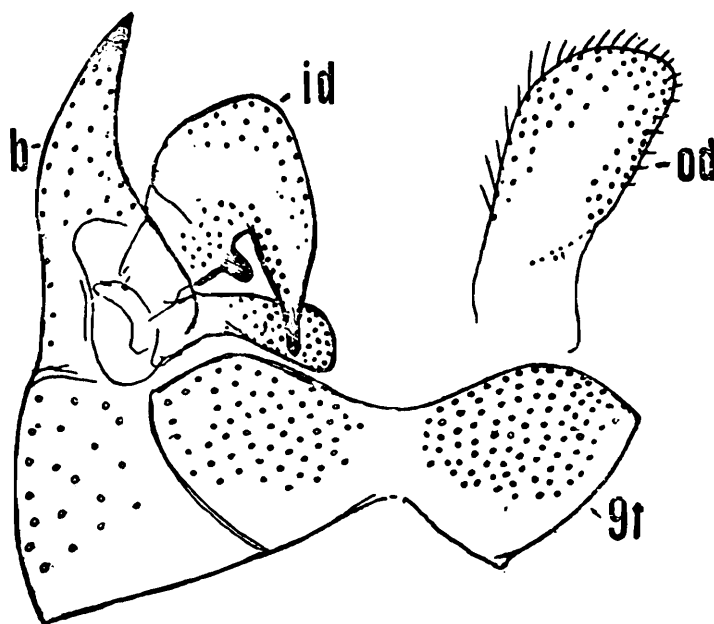
Male.—Length about 16 mm.; wing 17.5 mm.; antenna about 4.4 mm.

Frontal prolongation of head yellow, narrowly darkened on sides; nasus similarly yellow, distinct; palpi with basal segments yellowish brown, the relatively short terminal segment clearer brown. Antennae relatively short; scape and pedicel clear yellow; first flagellar segment brown, succeeding segments dark brown to brownish black basally, the remainder medium brown; flagellar segments moderately incised; verticils subequal to or a trifle exceeding the segments; terminal segment reduced to a tiny thimble. Head light cinnamon brown, the surface sparsely pruinose, with a distinct, median, dark brown vitta extending from the low vertical tubercle almost to the occiput.

Pronotum brownish yellow. Mesonotal praescutum with the ground colour grey, with four dark blackish grey stripes, the mesal edges of the intermediate pair very narrowly bordered by still darker, the remainder of stripes not or scarcely margined; humeral region and antero-lateral portions of praescutum yellow; interspaces of the ground colour, with numerous yellow setae; median region of scutum grey, more brownish at the suture, the lobes grey, each with two blackish grey areas; scutellum chiefly infuscated, the parascutella paler; mediotergite obscure brownish yellow, the posterior third more darkened. Pleura chiefly yellow, including the dorsopleural region, the anepisternum, ventral sternopleurite and ventral meron more infuscated. Halteres with stem yellow, knob dark brown, the apex again paler. Legs with the coxae obscure yellow, with long abundant setae; trochanters yellow; femora dark brown, the bases brightened, tip black, preceded by a conspicuous, obscure yellow ring that is about two-thirds as extensive as the blackened tip; tibiae dark brown; tarsi black. Wings with a weak brownish tinge, variegated by more cream-coloured areas, including a more or less distinct band beyond arculus, almost crossing the wing; a prestigmal area in cell R_1 ; a poststigmal fascia extending from costa through cell $1st\ M_2$ into the base of cell M_3 ; a conspicuous oval area at three-fourths the length of cell M ; wing-tip beyond the poststigmal band uniformly of the ground; stigma oval, darker brown; prearcular field clearer yellow; cells C and Sc yellow; veins brown. Venation: Rs long, about two and one-half times $m-cu$; tip of R_{1+2} pale but entire, without trichia; petiole of cell M_1 one-half longer than m .

First abdominal tergite and extreme base of second reddish, the succeeding tergites black; basal sternites reddish brown, passing into black on outer segments. Male hypopygium (text-fig. 5) with the tergite,

9t, entirely pale, the caudal margin broadly and evenly emarginate, apparently with no ventral lobes or blades and thus entirely unarmed



TEXT-FIG. 5.—*Tipula (Vestiplex) subreposita*, sp. nov.; male hypopygium, type.

except for abundant setae. Basistyle, *b*, produced caudad into an unusually strong and powerful spine, broad-based, the acute tip narrowly blackened. Outer dististyle, *od*, a simple flattened clavate blackened blade, its setae relatively short and sparse. Inner dististyle, *id*, of normal form, the rostral prolongation long, its tip obtuse, before apex with an acute spinous point (not shown in figure). Aedeagus short and stout, the penis slender.

Habitat.—India.

Holotype, ♂, Sureil, Mangpu, Darjiling District, Eastern Himalayas, altitude 5,000 feet, April-May 1917 (S. W. Kemp).

The nearest ally of the present fly is *Tipula (Vestiplex) reposita* Walker (*brevis* Brunetti) of which I have a wing available for comparison. In this latter species, *Rs* and *R*₂₊₃ are shorter and there are very definite pale areas in the outer ends of cells 1st *A* and 2nd *A*. Edwards (*Rec. Ind. Mus.* XXVI, p. 307, 1924) is responsible for the synonymy as given above. He further indicates that the species has the dististyle of very peculiar shape which is not the case in the present fly.

***Tipula (Vestiplex) himalayensis* Brunetti.**

1911. *Tipula himalayensis*, Brunetti, *Rec. Ind. Mus.* VI, p. 252.

Lectotype, ♂ Regd. No. 2407/20, Darjiling, Eastern Himalayas, altitude 6,000 feet, September 29, 1908 (E. Brunetti); in Indian Museum. This is the same as determined by Alexander, Brunetti and Edwards and evidently represents the true *himalayensis*.

Male hypopygium with the ninth tergite very small, largely concealed beneath the eighth tergite, the caudal margin deeply emarginate. Outer dististyle a flattened blackened lobe. Basistyle complete, the outer end produced caudad into a long point, the ventral margin with yellow setae. Eighth sternite unarmed.

Tipula (Vestiplex) subtineta Brunetti.

1912. *Tipula subtineta*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, p. 326, pl. vi, fig. 18 (genitalia).

Described from various stations in the Eastern and Western Himalayas and in the Khasi Hills, Assam. The following records of the species are available :

♂, Regd. No. 2477/20, Darjiling, Eastern Himalayas, altitude 7,000 feet, May 8, 1917 (E. Brunetti) ; Shamdang, Sikkim, altitude about 3,000 feet, September 7, 1909 (Indian Museum Collector), in poor condition ; Above Tura, Garo Hills, Assam, altitude 3,500-3,900 feet, September 1917 (Mrs. Kemp) ; Cherrapunjee, Assam, altitude 4,400 feet, October 2-8, 1914 (S. W. Kemp).

Are-description of the types is given below.

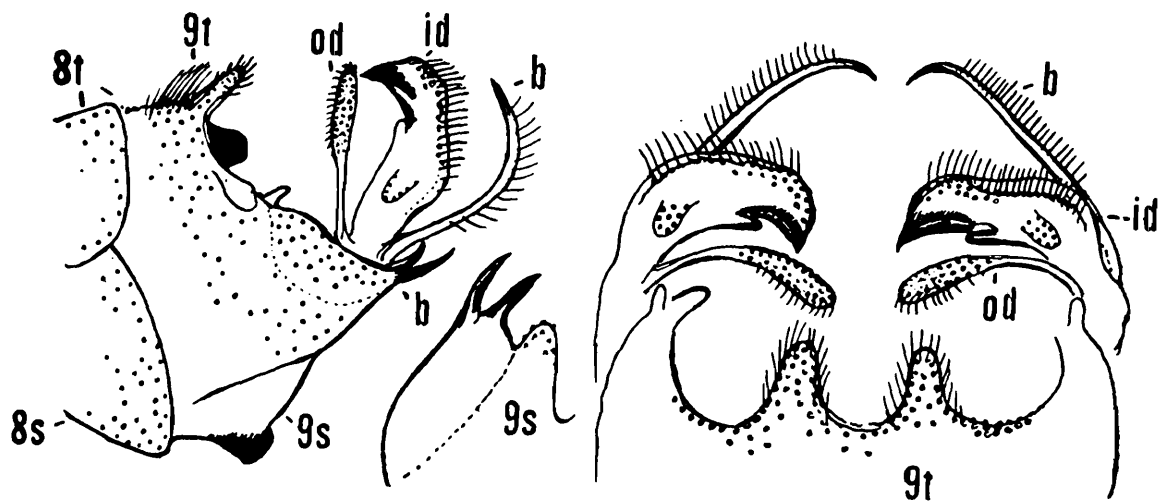
Male.—Length about 15—17 mm. ; wing 19—22 mm., antenna about 3.3—3.6 mm.

Frontal prolongation of head obscure yellow above, somewhat darker on sides ; nasus distinct ; palpi yellowish brown to obscure yellow. Antennae with basal three segments yellow ; succeeding segments dark brown, the distal ends of segments narrowly pale to produce a weak bicoloured appearance ; beyond the fourth or fifth flagellar segment, the organ becomes uniformly dark brown ; verticils very long and conspicuous. Head yellow, with a central vitta and the posterior borders of eyes darker brown.

Pronotum obscure yellow, variegated with darker. Mesonotal praescutum with ground colour light brown or yellowish brown, with four dark brown stripes that are narrowly bordered by darker brown, especially the intermediate stripes and the mesal edges of the lateral pair ; scutum obscure brownish yellow, each lobe with two dark brown areas ; posterior sclerites of mesonotum yellow, the scutellum and mediotergite with a narrow, dark brown, central vitta. Pleura yellow, the anepisternum, sternopleurite and ventral meron variegated with more brown areas ; ventral pleurotergite with a paler yellow pollinosity. Halteres yellow, the base of knob dark brown. Legs with the coxae pale, sparsely pruinose ; trochanters obscure yellow ; femora brownish black, restrictedly brightened at bases ; tibiae and tarsi dark brown to brownish black ; legs very long and slender, especially the tarsi (middle leg, femur, 14 mm. ; tibia, 16 mm. ; tarsus, 37 mm.). Wings relatively narrow, with a conspicuous basal petiole ; ground colour pale brown, very sparsely variegated by darker brown and whitish subhyaline areas, the darker markings including a restricted post-arcular darkening ; small areas at origin of *Rs*, along cord, a wash along mid-length of outer radial cells, and a seam along vein *Cu* ; wing tip and outer medial field somewhat paler brown ; outer half of cell *M* weakly darkened, enclosing a restricted pale area about three-fourths the length of cell ; cell *C* uniformly brownish yellow, cell *Sc* darker brown ; veins brown, paler in the obliterative portions. Venation : *Rs* long, nearly two and one-half times *m-cu* ; *m-cu* shortly before fork of *M*₃₊₄.

Abdomen relatively short and stout ; tergites brown medially, more reddish on either side, sublaterally with a narrow brownish black streak, the actual lateral border yellow ; fifth and succeeding segments

more uniformly dark brown to black, only the lateral borders pale; sternites reddish-brown, the outer segments darker, with very narrow yellow posterior margins; hypopygium black. Male hypopygium (text-fig. 6) with the tergite, *9t*, not separated from the sternite; basistyle, *b*, completely separated by a suture. Ninth tergite narrow, the caudal border with two finger-like fleshy lobes separated by a broad U-



TEXT-FIG. 6.—*Tipula (Vestiplex) subtinctoria* Brunetti; male hypopygium, details.

shaped notch, provided with short abundant setulae; dorsal surface of tergite with long erect setae; submedially on ventral face the tergite is produced caudad into two compressed blackened plates that lie parallel to one another, their margins microscopically roughened. Basistyle, *b*, at apex produced into two subequal short black spines lying side by side; in the Sikkim specimen, the outermost of these spines is longer and more slender, nearly twice the inner spine. At base of inner dististyle and the spines of the basistyle a conspicuous elongate pale rod that is gently curved, the acute tip narrowly blackened, the outer margin with a series of very long pale setae. Ventral median region of ninth sternite produced into an obtuse darkened lobe, directed ventral and slightly caudal. Outer dististyle, *od*, long and slender, narrowly spatulate on outer half, provided with long erect setae. Inner dististyle conspicuous, its face with an erect setiferous lobe. Penis very stout and conspicuous. Eighth sternite, *8s*, with margin straight and simple, not modified by lobes or hair pencils.

The only described species with which *subtinctoria* requires comparison is *Tipula (Vestiplex) quasimarmoratipennis* Brunetti, the type of which came from Darjiling; the species evidently being on the wing in spring (May). As indicated elsewhere in this paper, I am not entirely certain that the second female of *quasimarmoratipennis*, a paratype from Kurseong collected in September, is identical with the actual type. Edwards (*Rec. Ind. Mus.* XXVI, p. 305, 1924) who saw the type of this fly in Brunetti's collection believed that it was identical with the Formosan *T. (V.) biserra* Edwards. If this is indeed the case, I do not believe that *subtinctoria* is very close to *quasimarmoratipennis* since it differs conspicuously in the pattern of the antennae, legs and body. Both Edwards and Brunetti describe their species as having three praescutal stripes instead of the four in the present fly but the paratype of *quasimarmoratipennis* above mentioned has four such stripes. Brunetti

(*Rec. Ind. Mus.* XV, p. 262, 1918) records six further specimens of *quasimarmoratipennis* from the Garo Hills, Assam, with exactly the same data as one of the present *subtinctor* records. Whether both *subtinctor* and *quasimarmoratipennis* are included in such material remains in question. It should be noted that the presence of two spines on each basistyle of the male hypopygium of *subtinctor* provides an almost unique character for the separation of the species from the other numerous regional forms of *Vestiplex* having the basistyle unarmed or with a single such spine.

***Tipula (Vestiplex) distifurca*, sp. nov.**

General colouration yellow or greyish yellow, the praescutum with four very conspicuous brown stripes that are narrowly bordered by darker; head, scutellum and mediotergite with a capillary brown central vitta; femora dark brown with a narrow yellow subterminal ring; wings with a long basal petiole, pale brown, variegated with cream-coloured areas, including a post-stigmal band; abdomen reddish yellow basally, the tergites with three narrow brown stripes, much broader and more conspicuous in female; outer segments, including genitalia of both sexes, black; male hypopygium with the spine of basistyle very small, the outer mesal angle further produced into a stouter arm; basistyle bearing a long pale arm that splits at apex into two acute spines; ovipositor with serrate cerci.

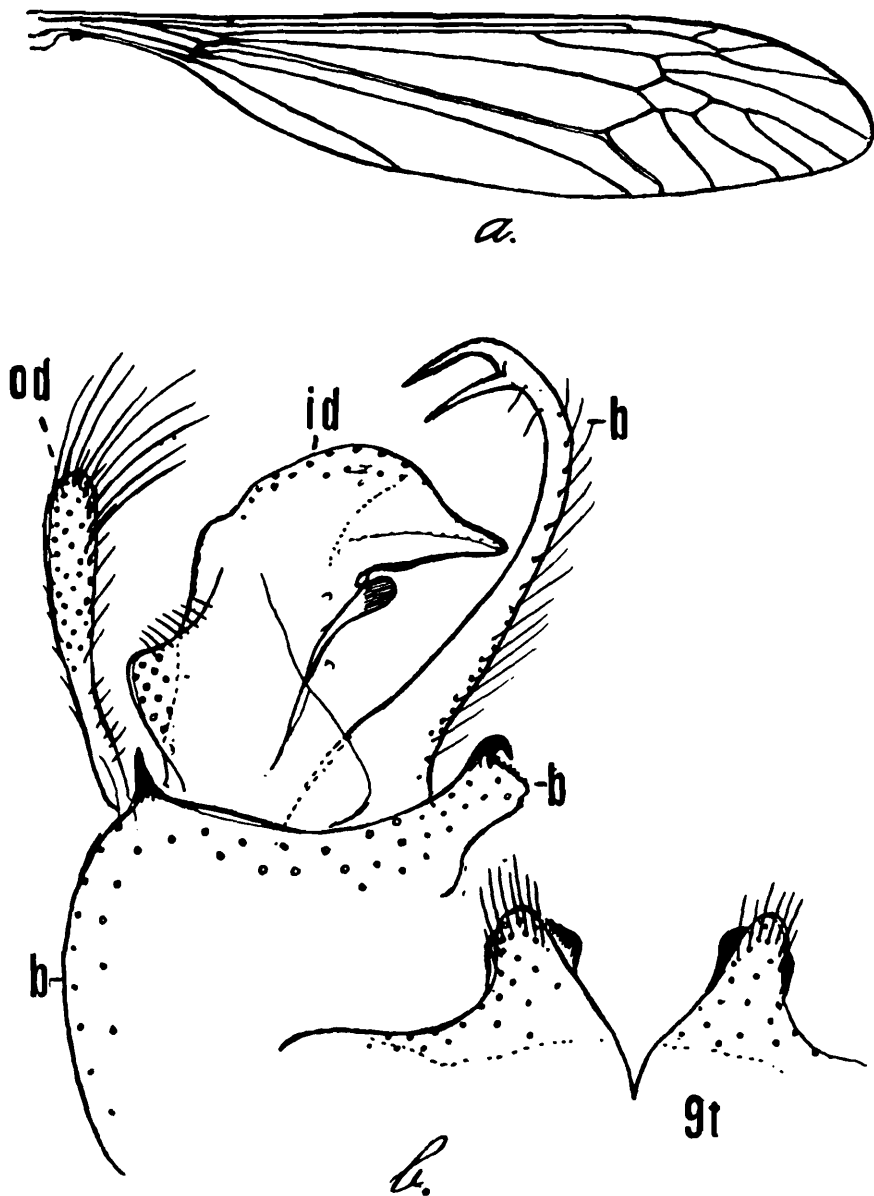
Male.—Length about 13-14 mm.; wing 17-18 mm.; antenna about 5 mm.

Female.—Length about 19 mm.; wing 17 mm.

Frontal prolongation of head yellow pollinose over a darkened ground; nasus elongate; palpi with basal segments obscure brownish yellow, terminal segment black. Antennae of moderate length; scape and pedicel yellow; first flagellar segment brownish yellow, succeeding segments black, the incisures but especially the apices of the segments vaguely pale; outer segments uniformly blackened; flagellar segments moderately incised; longest verticils nearly equal in length to the segments. Head obscure greyish yellow with a narrow dark brown median line.

Pronotum brown, yellow pollinose. Mesonotal praescutum greyish yellow, with four narrow brown stripes that are very distinct against the ground, the stripes more or less bordered by darker brown, the mesal edges of the intermediate pair involving the cephalic portion of the median interspace; cephalic ends of intermediate dark stripes a little paler; scutum greyish yellow, each lobe with two conspicuous dark brown areas, the more posterior one longer; outer posterior portion of each scutal lobe restrictedly darkened; posterior sclerites of notum obscure yellow, with a continuous median brown vitta that is somewhat narrower on the scutellum. Pleura almost uniform yellow, without distinct markings. Halteres with stem yellow, knob dark brown. Legs with coxae and trochanters yellow; femora narrowly yellow at bases, the remainder dark brown with a narrow yellow subterminal ring before the broader black apex; tibiae and tarsi brownish black to black. Wings (text-fig. 7a) with a long basal petiole; ground colour

pale brown, variegated with cream-coloured areas, including a post-stigmal band from *C* to cell R_5 ; numerous smaller pale areas in cells



TEXT-FIG. 7.—*Tipula* (*Vestiplex*) *distifurca*, sp. nov; a., venation; b., male hypopygium.

before cord, the largest in R_1 , near outer end of cell *M*, a common area near bases of cells *R* and *M*, and across the bases of cells *Cu* to 2nd *A*, inclusive; cell *Sc* uniformly dark brown; obliterative areas across cell 1st M_2 from the extreme outer end of cell *R* into the base of cell M_3 ; veins brown, not markedly different in colour in the pale areas Venation: R_{1+2} distinct; *m-cu* a short distance before fork of M_{3+4} .

Abdomen with basal four segments reddish yellow, the fifth and succeeding segments black; in male with a median dark stripe on tergites, widest on first segment and base of second, thence narrowed and indistinct to almost obliterated; lateral borders of tergites restrictedly grey; fifth tergite more reddish brown basally and sublaterally; sternites with a more or less distinct median brown vitta. In female the basal seven tergites yellow with a broad, continuous, median, black vitta, with indications of a much narrower and less distinct sublateral stripe; lateral tergal borders narrowly grey; genital shield brownish black; ovipositor with cerci long and slender, brownish black, the lateral teeth small but numerous. Male hypopygium (text-fig. 7b) with

the dorsal lobes of tergite, *9t*, pale, gently divergent, narrowly obtuse and tufted with long setae at tips; immediately ventrad of these lobes are slightly broader, more blackened lobes, their apices obliquely truncate. Basistyle, *b*, with apex terminating in a small black spine, the mesal-caudal portion of style further produced into a strong arm that is directed mesad, its outer angle further produced into a curved black spine; from near the bases of the dististyles arises a long conspicuous arm that is split at apex into two powerful spines. Dististyles as figured, the outer, *od*, elongate-clavate, pale; inner style, *id*, with the rostral portion blackened, relatively narrow.

Habitat.—India (Punjab).

Holotype, ♂, round about Hurst Cottage, Bakrota Hill, Dalhousie, altitude 7,000 feet, May-June, 1927 (S. L. Hora). *Allotopotype*, ♀. *Paratopotypes*, 4 ♂♂, with the types.

The nearest relative of the present fly seems unquestionably to be *Tipula* (*Vestiplex*) *subtincta* Brunetti, which differs conspicuously in the hypopygial structures, as the simple pale arm and entirely different apical spines of the basistyle. The pale subterminal femoral ring is more like the otherwise quite distinct *T* (*V.*) *himalayensis* Brunetti and differs from other relatives that are actually closer, as *subtincta* and *T* (*V.*) *quasimarmoratipennis* Brunetti.

***Tipula* (*Vestiplex*) *quasimarmoratipennis* Brunetti.**

1912. *Tipula quasimarmoratipennis*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 320, 321, pl. v, fig. 14 (wing).

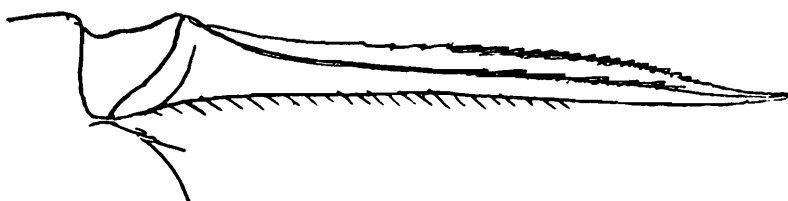
The type, ♀, Regd. No. 2427/20, was from Darjiling, May 23, 1910, collected by Brunetti, and has not been seen by the present writer. A paratype, ♀, Regd. No. 2428/20, collected at Kurseong in the Eastern Himalayas, altitude 5,000 feet, September 9, 1909, by N. Annandale, has been reexamined, but as indicated under the discussion of *subtincta*, is doubtfully conspecific with the type. This paratype may be re-described as follows:

Female.—Length about 23 mm.; wing 20 mm.

Frontal prolongation of head ochreous above, darker laterally, the stout nasus brownish ochreous; palpi dark brown. Antennae short; scape and pedicel obscure yellow; first flagellar segment fulvous yellow; succeeding flagellar segments weakly bicoloured, the basal enlargement of the segments brownish black, the apical portions paler brown; outer segments more uniformly darkened. Head buffy, with a broad, conspicuous, dark brown, median line extending from the anterior end of the vertical tubercle to the occiput.

Mesonotal praescutum obscure yellow, with four brown stripes, the intermediate pair narrowly margined internally with dark brown; lateral stripes greyish brown, the mesal margin broadly darker brown; scutum obscure brownish yellow, each lobe with two separated, darker brown areas; scutellum and postnotum brown, the former brighter at base; an interrupted brown median line. Pleura discoloured, the katepaurotergite silken olive grey. Halteres pale brown, the base of stem brighter, knob darker brown with paler tips. Legs with the coxae brownish ochreous; trochanters pale brown; femora brownish yellow,

the tips narrowly but distinctly dark brown; tibiae light brown, the tips dark brown; tarsi passing into dark brown. Wings with pattern as figured by Brunetti (*loc. cit.*) but the venation slightly different: Distal section of R_2 straight; R_3 elongate, at tip deflected caudad so cell R_2 at margin is extensive, about one-third wider than cell R_3 . Veins, excepting C , Sc and R , apparently destitute of macrotrichia.



TEXT-FIG. 8.—*Tipula (Vestiplex) quasimarmoratipennis* Brunetti; ovipositor.

Abdomen of moderate length only; tergites obscure yellow, with conspicuous dark brown median and sublateral stripes, the extreme margins of the tergites narrowly pale; sternites obscure yellow, a little darker medially. Ovipositor (text-fig. 8) with the elongate cerci slender, their outer margins serrate on distal two-thirds; hypovalvae rudimentary.

***Tipula (Tipulodina) simillima* Brunetti.**

1918. *Tipula simillima*, Brunetti, *Rec. Ind. Mus.* XV, p. 265.

The type, ♂, Regd. No. 6841/H1, was from Castle Rock, North Kanara District, on the Goa Frontier, western coast of Bombay Presidency, collected October 11-26, 1916, by S. W. Kemp. A re-description of the type is given below.

Male.---Length about 17 mm.; wing about 17 mm. (Brunetti gives the length as 12-13 mm. but this is far too little).

Antennae very short, if bent backward ending far before the wing-root; scape pale yellow at base, the apex darkened; pedicel obscure yellow; flagellum brownish black. Anterior vertex produced into a very slender, acute, median tubercle.

Fore and middle legs with the pale subapical ring of femur about twice as wide as the dark apex; on posterior femora the yellow ring greatly reduced, scarcely one-half as extensive as the blackened apex; fore and middle tibiae with only the subapical white rings, these broad, nearly apical in position, only the extreme tip of the segment blackened; posterior tibiae with this ring a trifle wider, together with a subbasal white ring shortly beyond proximal end of segment; basitarsi black, the tips broadly whitened, narrowest on fore legs where it includes less than the distal third, widest on posterior legs where about the distal two-fifths is included; second tarsal segment broadly blackened at base, most extensive on the fore legs where about the basal half is included, narrowest on the posterior legs where only the extreme base is blackened; fore legs with tarsal segment three dark basally, paler distally; remainder of tarsi white, the terminal two segments blackened. Wings hyaline, iridescent; brown pattern restricted; wing apex including outer ends of cells R_2 , R_3 and R_5 , together with the extreme cephalic margin of M_1 ; stigma small, confluent with a small cloud on anterior

cord; *m-cu* and distal section of *Cu*₁ narrowly bordered with brown; no dark marking in cell *M*.

Male hypopygium with the ninth tergite dark grey, transverse, the caudal margin broadly emarginate, fringed with dark setae. Hypopygium entirely blackened; suture between tergite and sternite incomplete; eighth tergite telescoped beneath the seventh; seventh and eighth sternites with conspicuous yellow setae. Inner dististyle profoundly bifid, both arms blackened, more or less setiferous.

Three males were sent to me for study by the Indian Museum in 1928, presumably the three specimens mentioned in the original diagnosis. However, I have a still additional male, received by exchange with Edwards, bearing exactly the same data and agreeing entirely with the type.

***Tipula (Oreomyza) striatipennis* Brunetti.**

1912. *Tipula striatipennis*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 325, 326, pl. v, fig. 16 (wing).

The type, ♀, Regd. No. 2432/20, was from Kurseong, Eastern Himalayas, altitude 5,000 feet, collected July 6, 1908, by N. Annandale. Edwards (*Rec. Ind. Mus.* XXVI, p. 305, 1924) believed that the species was identical with *Tipula (Oreomyza) quadrifasciata* Matsumura [*Thousand Insects Japan, Addit.* II, p. 460, pl. xxv, fig. 3 (wing and body), 1916] but in my opinion the two species are entirely distinct, as will be shown by the following comparison.

A re-description of type is given below.

Females.—Length about 11-11.5 mm.; wing 10.6 mm.

Frontal prolongation of head, including the nasus, brownish black; palpi black. Antennae with scape and pedicel light brown; first flagellar segment black, its tip reddish brown; succeeding flagellar segments bright reddish brown, only the terminal segments becoming darker brown. Head dark grey, with a capillary brown median vitta and numerous dark setigerous punctures.

Mesonotal praescutum yellowish grey, with three brown stripes, the median one broad in front and here indistinctly divided by a dull grey area; scutum and scutellum grey, with a continuous, capillary, brown, median vitta; scutal lobes each with two confluent brown spots; post-notum brownish grey. Pleura dark grey, with a relatively indistinct longitudinal paler stripe. Halteres obscure yellow, the knobs brown. Legs brownish black, the femoral bases only very narrowly and vaguely brightened. Wings whitish subhyaline, quadrivittate with brown, almost as figured by Brunetti (*loc. cit.*). Distal section of *R*₁₊₂ atrophied, leaving only a minute spur.

Abdominal tergites brownish yellow, the outer segments darker brown, the caudal and sublateral margins of the segments dark, the extreme caudo-lateral portions of the tergites restrictedly pale; outer sternites chiefly darkened. Ovipositor with the elongate cerci slender, chestnut to horn coloured; margins smooth.

***Tipula (Oreomyza) quadrifasciata* Matsumura.**

1918. *Tipula aluco*, Alexander, *Journ. N. Y. Ent. Soc.* XXVI, pp. 70, 71.

The types of *aluco* are preserved in alcohol which has changed the colour of the pruinosity. The following description was made from freshly preserved dry females. It may be noted that the measurements given by Matsumura for his species are too great. I have paratypes of *quadrifasciata* from Kyoto, Japan, kindly presented to me by Dr. Akio Nohira who discovered the species.

Frontal prolongation of head longer, clear light grey above, the nasus conspicuous, light yellow; palpi dark brown. Antennae with the scape, pedicel and first flagellar segment yellow, the remaining flagellar segments dark brown. In the male the flagellum weakly bicoloured, the basal enlargements of the segments a little darker than the apical portions.

Praescutal interspaces with the brown setigerous punctures much larger and more conspicuous than in *striatipennis*; median brown line on scutum and scutellum obsolete or nearly so. Pleura clear light grey. Wings with the brown bands narrower, that at origin of *Rs* only about one-half as wide as the preceding white band. Venation: Cell 1st M_2 small, pentagonal, the longest face being the second section of M_{1+2} , the next being the basal section of M_3 which is longer than M_{3+4} , *m* shortest. In *striatipennis* M_{3+4} longer than M_3 , as figured by Brunetti.

Abdominal tergites obscure yellow with a conspicuous dorso-median dark brown stripe that is broader behind; caudal margins of the subterminal segments narrowly pale. Ovipositor with the genital shield shiny chestnut brown, the elongate cerci blackened.

***Tripula (Lunatipula) marmoratipennis* Brunetti.**

1912. *Tipula marmoratipennis*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, pp. 319-320, pl. v, fig. 13 (wing).

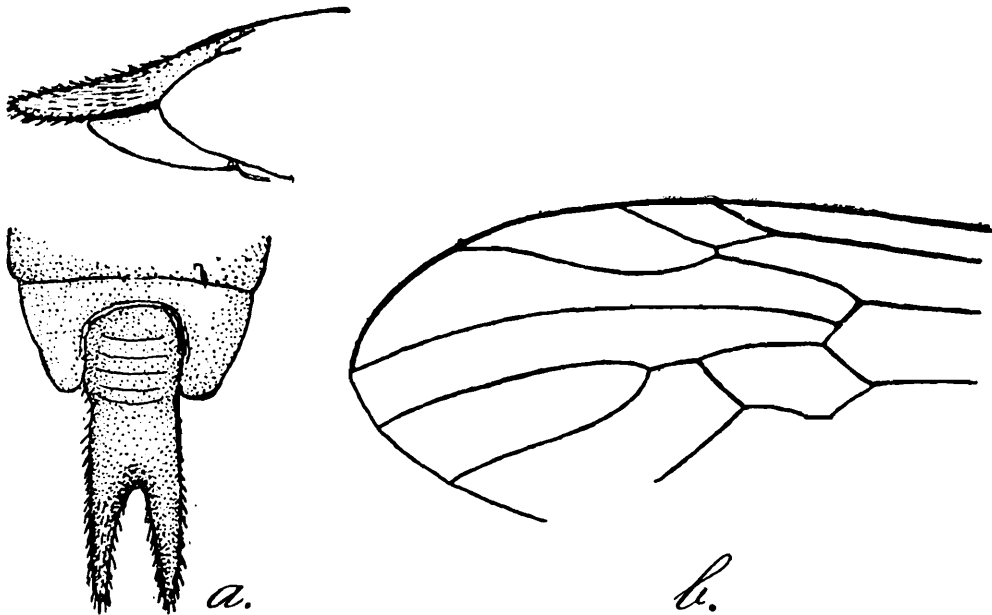
The holotype, ♀, Regd. No. 2425/20, was from Darjiling, Eastern Himalayas, altitude 7,000 feet, May 24, 1910 (not April, as stated by Brunetti), collected by E. Brunetti. A paratype, ♀, Regd. No. 2426/20, likewise from Darjiling, taken August 7, 1909, by C. Paiva. Both types were studied. The re-description follows.

Female.—Length about 16 mm.; wing 22 mm.

Frontal prolongation of head obscure yellow above, with a vague median brown line, the sides darker; nasus short and stout; palpi brown, the outer segments passing into orange. Antennae short, obscure yellow; flagellar segments obscure fulvous, their bases scarcely darkened. Head light ochreous, the vertical tubercle whitened; vertex with a narrow dark brown median vitta, widened in front.

Mesonotal praescutum yellowish grey with four olive brown stripes that are narrowly margined with darker brown, the lateral stripes more conspicuously darkened along the mesal margin; interspaces with numerous pale erect setae, the punctures inconspicuous; pseudosutural foveae small, circular; scutum grey, each lobe with two confluent olive brown areas, the triangular posterior one larger; scutellum and medio-tergite yellowish grey with a continuous median brown vitta; para-

scutella dark, smooth. Pleura pruinose with grey and pale olive. Halteres obscure yellow, the knobs dark brown with orange apices. Legs with the coxae pale olive grey; trochanters reddish brown; femora obscure yellow, the tips narrowly brownish black; tibiae and tarsi brownish black. Wings pale yellowish, cells *C* and *Sc* darker yellow; stigma yellowish brown; wing surface variegated with grey and pale brown; pattern entirely as figured by Brunetti (*loc. cit.*). Venation of Brunetti's figure slightly inaccurate, especially in the shape



TEXT-FIG. 9.—*Tipula* (*Lunatipula*) *marmoratipennis* Brunetti, type; a., ovipositor; b., venation.

of cell R_2 and the course of vein R_3 which is strongly arched, constricting cell R_3 so that it is narrowest before midlength (text-fig. 9b) petiole of cell M_1 shorter than m .

Abdomen with tergites one to five inclusive dark orange fulvous, trivittate with black, the median stripe interrupted; sublateral stripes more continuous; segments with silvery grey lateral areas; remainder of tergites darker brown, pruinose, more heavily so on segments seven to nine; sternites pale, the basal segments pruinose, the segments with a darker brown lateral stripe. Ovipositor (text-fig. 9a) with the valves small and fleshy, the cerci lying side by side, parallel, their margins setiferous; hypovalvae smaller, compressed.

Related to *Tipula* (*Lunatipula*) *holoteles* Alexander, *T* (*L.*) *naviculifer* Alexander, and *T* (*L.*) *shogun* Alexander, all of Japan.

***Nephrotoma perhorrida*, sp. nov.**

General colouration yellow, the praescutum with three blackish grey or plumbeous stripes that are narrowly bordered by velvety black, the central stripe entire or nearly so; antennae black, only the pedicel more brownish; head with a conspicuous T-shaped brown area, the stem reaching the occipital brand; pleura heavily patterned with brownish black; wings with cells before cord strongly infuscated, those beyond cord clearer; abdominal tergites obscure yellow with three broad dark brown stripes, the outer segments uniformly blackened; male hypopygium very conspicuous; basistyle produced caudad into a cylindrica

lobe, the ventral margin with unusually long, coarse setae ; eighth sternite produced medially into a long tongue-like lobe.

Male.—Length about 10-11 mm. ; wing 9-11 mm. ; antenna 3.3-3.4 mm.

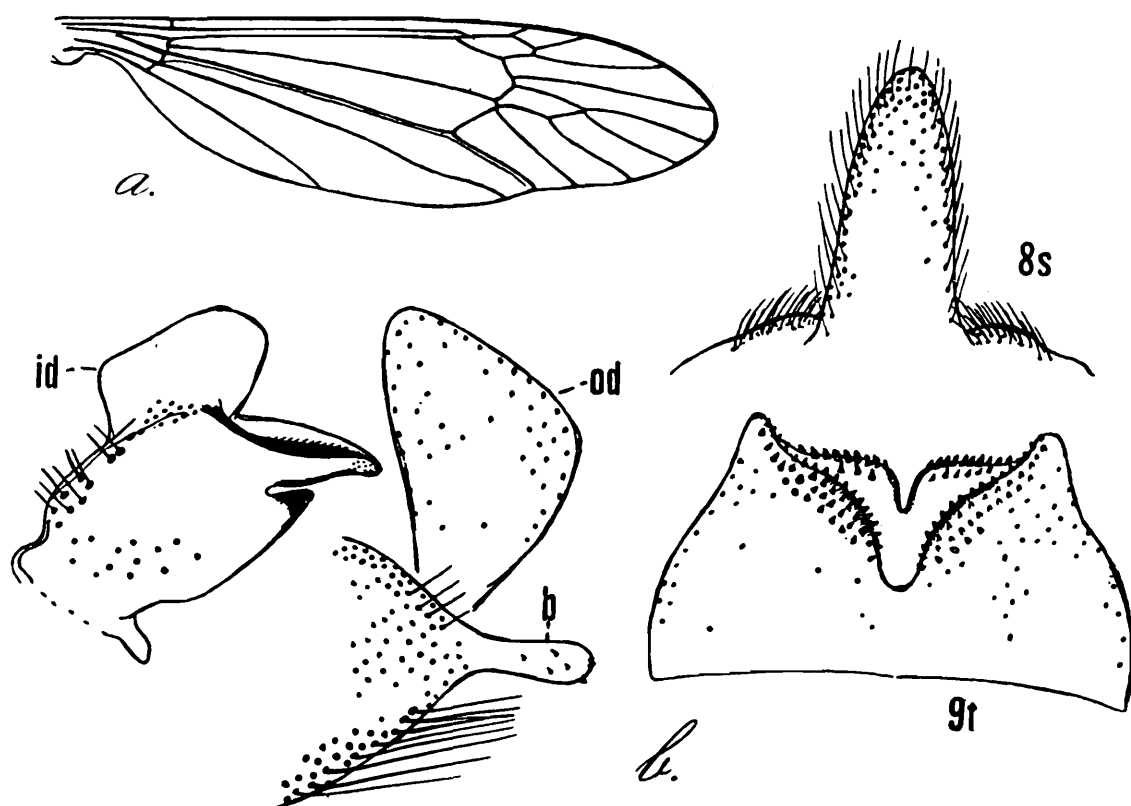
Female.—Length about 13-14 mm. ; wing 11-12 mm.

Frontal prolongation of head above black, including the nasus, on sides and beneath yellow ; palpi black. Antennae black, the pedicel more brownish ; flagellar segments only moderately incised, the basal enlargements relatively small ; longest verticils subequal in length to the segments, unilaterally arranged, those on opposite face of segment reduced to short spinous bristles. Vertical tubercle yellow, with a conspicuous median impressed line ; posterior vertex with a T-shaped dark mark extending from either eye behind the vertical tubercle, the stem extending as a median area to the occiput ; occipital brand small and ill-delimited in the general darkened area ; head behind with conspicuous black and longer yellow setae.

Pronotum yellow, the sides conspicuously dark brown. Mesonotal praescutum with the ground light yellow, with three blackish grey or plumbeous stripes that are narrowly bordered by velvety black, the intermediate pair barely indicated by these mesal edges so the central stripe is entire or virtually so ; a conspicuous dark brown cloud opposite anterior ends of lateral stripes, not quite reaching the lateral border, the stripes themselves not outcurved ; scutum with median area and extreme lateral portions of lobes yellow, each lobe chiefly covered by a blackish grey area that is narrowly bordered by velvety black, the suture chiefly dark ; scutellum brownish black, parascutella obscure yellow ; mediotergite with a broad dark brown central stripe, wider and darker on posterior border ; posterior lateral portions of mediotergite with relatively few but conspicuous coarse black setae ; pleurotergite with katepaleurotergite obscure yellow, just above the halteres bordered by dark brown, the anepaleurotergite more infuscated. Pleura yellow, very conspicuously patterned with dark brown or brownish black on the anepisternum, ventral sternopleurite, ventral meron, and along the suture between anepisternum and pteropleurite. Halteres with stem obscure brownish yellow, knob dark brown, the apex vaguely pale yellow. Legs with coxae obscure yellow, more or less infuscated basally, especially in front ; trochanters yellow ; femora pale brown to yellowish brown, the tips weakly darkened ; remainder of legs obscure yellow, the terminal tarsal segments passing into black. Wings (text-fig. 10a) with cells before cord rather strongly infuscated, beyond the cord much paler ; stigma oval, dark brown ; a distinct, paler brown cloud on anterior cord ; veins brown. Stigma with numerous trichia before R_2 ; wing dilated in the Anal field. Venation : R_s a little shorter than $m-cu$; cell M_1 narrowly to broadly sessile.

Abdominal tergites obscure yellow, with three broad, dark brown stripes, the median one narrowly interrupted at the posterior border of the intermediate segments ; sixth and succeeding segments uniformly darkened, sternites yellow. Male hypopygium (text-fig. 10b) having the tergite, $9t$, with an upper plate that bears a broad U-shaped notch, the lobes densely set with microscopic blackened points, and a lower plate

divided into lobes by a shorter and much narrower median notch, the truncated margins of the lobes likewise set with points. Basistyle, *b*,



TEXT-FIG. 10.—*Nephrotoma perhorrida*, sp. nov.; *a.*, venation; *b.*, male hypopygium, details.

conically produced, the apex abruptly prolonged into a cylindrical lobe that bears a few chitinized triangular points; ventral surface of basistyle with very long, conspicuous yellow setae, the dorsal surface with less conspicuous bristles. Outer dististyle, *od*, unusually broad, the tip obtuse. Inner dististyle, *id*, with a high dorsal crest; beak slender. Eighth sternite, *8s*, produced medially into a very long and conspicuous liguliform lobe, the apex narrowly obtuse, the surface with abundant long black setae; subtending shoulders of the lobe likewise with long conspicuous setae.

Habitat.—India (Khasi Hills).

Holotype, ♂, Cherrapunji, altitude 4,000 feet, 1935 (Sircar).

Allotopotype, ♀. *Paratopotypes*, 15 ♂ ♀. Paratypes deposited in the Indian Museum.

Nephrotoma perhorrida is very different from all other described regional species. The remarkable male hypopygium, especially the long-produced basistyle and the elongate liguliform lobe of the eighth sternite, will readily separate the fly from other generally similar regional forms, as *Nephrotoma pleurinotata* (Brunetti).

Subfamily CYLINDROTOMINAE

Stibadocerella pristina Brunetti.

1918. *Stibadocerella latefurcata*, Brunetti (*lapsus calami*), *Rec. Ind. Mus.* XV, p. 280.

1918. *Stibadocerella pristina*, Brunetti, *Ibid.*, p. 283.

A paratype, ♂, Regd. No. 3967/H2 from above Tura, Garo Hills, Assam, altitude 3,500-3,900 feet, July 1917 (S. W. Kemp).

Male.—Length about 10 mm.; wing 9.2 mm.; antenna about 13 mm.

Antennae (male) much longer than the body, pale yellow, the outer segments of flagellum darker. Body colouration as described by Brunetti. Praescutal stripes distinctly separated. Pale ring at base of tibia distinct; pale apex of fore tibia relatively wide (1.7 mm.), slightly thickened, the setae similarly white; fore and middle basitarsi about as long as tibia, brown, only the extreme apex of each a little whitened. Wings hyaline, the veins black. Venation: Sc_1 ending before $r-m$, Sc_2 at its tip; second section of Rs a little shorter than the basal section; R_{2+3} oblique; free tip of Sc_2 and R_{1+2} entirely atrophied; cell $1st\ M_2$ large, roughly rectangular; $m-cu$ longer than the distal section of Cu_1 ; vein Cu_2 evident to opposite $m-cu$; vein $1st\ A$ long, nearly straight; vein $2nd\ A$ very short, opposite the arculus becoming confluent with the Anal margin of wing, to all intents and purposes, lacking.

~Subfamily LIMONIINAE.

Tribe LIMONIINI.

***Limonia (Limonia) albitarsis* (Alexander).**

1915. *Dicranomyia albitarsis*, Alexander, *Proc. U. S. Nat. Mus.* XLIX, pp. 159, 160.

1916. *Dicranomyia tinclipennis*, de Meijere, *Tijd. v. Ent.* LVIII, Suppl., p. 66.

A broken specimen, Federated Malay States, Selangor-Pahang Boundary, Ginting Bidai, altitude 1,000 feet, April 1917 (C. Boden Kloss).

Limonia (Doaneomyia) altitarsis (Edwards) from New Hebrides [*Ann. Mag. Nat. Hist.* (9) XX, p. 233, 1927] was erroneously so printed though obviously intended for *albitarsis*. Since the specific name *albitarsis* would have been preoccupied in the genus by the present name, it seems advisable to retain the misprinted name *altitarsis*, even though without significance in the instance where used.

***Limonia (Libnotes) greeni* (Edwards).**

1928. *Libnotes greeni* Edwards, *Journ. Fed. Malay States Mus.* XIV, pp. 76, 82.

Metatypes of both sexes from Suduganga, Ceylon, bred October 21, 1921 from diseased bark of *Hevea* (R. Senior-White). Ceylonese specimens had been determined by Senior-White and Brunetti (*Rec. Ind. Mus.* XV, pp. 294, 295, 1918) as *Limonia (Libnotes) poeciloptera* (Osten Sacken).

***Limonia (Discobola) sp. prox. annulata* (Linnaeus).**

1758. *Tipula annulata*, Linnaeus, *Syst. Nat.*, Ed. 10; p. 586.

1824. *Limnobia*, Argus, Say, *Long's Exped. to St. Peter's River*, Append. 2, p. 358.

One badly injured specimen of indeterminate sex, Assam, Khasi Hills, forest west of dak bungalow, Mawphlong, April 13, 1927 (Gopi Ram). Despite its poor condition this specimen is of unusual interest

since the subgenus *Discobola* Osten Sacken had not before been recorded from British India. I feel relatively certain that the specimen pertains to *annulata*.

L. (D.) annulata has a vast range throughout the Holarctic Region, including northern North America and northern Eurasia as far south as the high mountains of the Philippines and Borneo (Kinabalu). From Kinabalu, two additional species of the subgenus have been described by Edwards. Two further species have been recorded from the Indo-Himalayan Region, including western China ; *L. (D.) taivanella* Alexander (Mount Omei, Szechwan, altitude 9,000 feet) and *L. (D.) armorica* Edwards, Mss., (Adung Valley, northeast Burma, altitude 12,000 feet). The latter fly is most similar to *taivanella* yet amply distinct, being very large (wing, male, 12 mm.) and with a distinctive wing pattern, the nuclei of the annulata areas being unusually large and dark, almost obliterating the inner pale ring of the annulus, such being the condition of all costal ocellate markings ; furthermore the supplementary brown dots are more numerous than in any other regional species, being especially numerous in cells R_1 , R , M , $1st\ M_2$, Cu , $1st\ A$ and $2nd\ A$. The male hypopygium agrees somewhat closely with that of *taivanella*, especially in the very conspicuous lateral lobes of the tergite and the long slender rostral prolongation of the ventral dististyle. There are distinct differences in the dorsal dististyle which is longer and more gently curved than in *taivanella*, and in the spines of the rostral prolongation which are more widely separated from one another. The more elongate ventromesal lobe of basistyle, the unexpanded tips of the gonapophyses, and the slightly capitate apex of the aedeagus show further minor but apparently constant differences for separating *armorica* from *taivanella*. *L. (D.) annulata* shows no supplementary brown dots in any of the cells of wing and the structure of the male hypopygium is entirely distinct.

***Limonia (Dicranomyia) bhutanica*, sp. nov.**

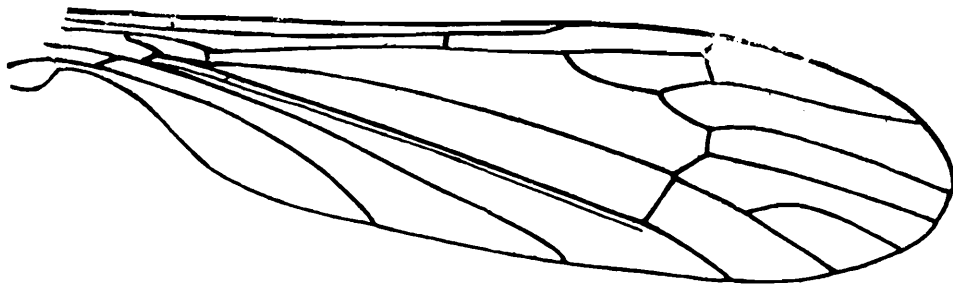
Size very small (wing, female, 3.5 mm.) ; general colouration brown, the praescutum with three more or less confluent, darker brown stripes ; antennae brownish black ; flagellar segments oval, all but the three or four outer ones with conspicuous apical pedicels ; anterior vertex wide ; legs obscure yellow ; wings greyish subhyaline, stigma lacking ; Sc_1 ending opposite origin of R_s ; Sc_1 very long, exceeding R_s in length ; cell M_2 open by the atrophy of m ; cell $2nd\ A$ wide.

Female.—Length about 3 mm. ; wing 3.5 mm.

Rostrum dark brown ; palpi pale brown. Antennae brownish black throughout ; flagellar segments oval, with conspicuous glabrous apical pedicels, especially long, conspicuous and abrupt on the basal segments ; distal three or four segments with pedicels short to lacking ; terminal segment a very little longer than the penultimate ; verticils long and conspicuous, exceeding the segments in length. Head light brown ; anterior vertex wide, approximately four times the diameter of scape ; ommatidia of eyes relatively coarse.

Pronotum and mesonotum uniformly medium brown, the praescutum with three more or less confluent darker brown stripes ; posterior sclerites of notum destroyed by pinning. Pleura brown, with indica-

tions of more blackened areas on propleura above the fore coxae and beneath the wing root. Halteres obscure yellow. Legs with the coxae brown ; trochanters obscure yellow ; only a single detached leg remains, this obscure yellow, the terminal two tarsal segments darkened ; claws simple. Wings (text-fig. 11) greyish subhyaline, the base slightly more



TEX-FIG. 11.—*Limonia (Dicranomyia) bhutanica*, sp. nov. ; venation.

brightened ; stigma lacking ; veins very pale brown. Venation : Sc_1 ending opposite origin of R_s , Sc_2 very far from its tip so vein Sc_1 is longer than the arcuated R_s ; basal section of R_{4+5} arcuated, about two-thirds R_s ; cell M_2 open by atrophy of m ; petiole of cell M_3 about two-thirds the cell ; cell 2nd A unusually wide, vein 2nd A arcuated.

Abdomen yellowish brown, somewhat darkened laterally ; sternites paler ; valves of ovipositor horn-yellow, the hypovalvae blackened basally ; cerci very slender.

Habitat.—Assam-Bhutan Border.

Holotype, ♀, northeast Mangaldai District, December 30-31, 1910 (S. W. Kemp).

The most generally similar regional species of *Dicranomyia* having cell M_2 of the wings open by the atrophy of m are *Limonia (Dicranomyia) innocua* (Alexander) and *L. (D.) absens* (Brunetti). Both of these species are much larger than the present fly and with the colouration of the body and wings distinct. Superficially the present fly is more like *L. (D.) aperta* (Wahlgren) of northern Europe and *L. (D.) brevivena* (Osten Sacken) of North America. The structure of the antennae indicates that the present fly is very distinct from all of the above mentioned species, more nearly approaching several species in the subgenus *Limonia* Meigen. The fly is one of the smallest members of the entire genus *Limonia* yet made known.

***Limonia (Geranomyia) cernua*, sp. nov.**

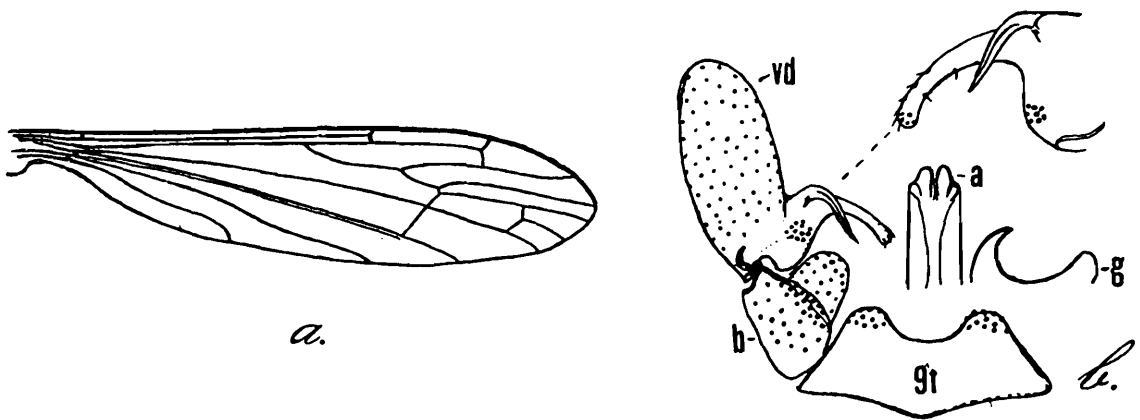
General colouration of mesonotum obscure yellow, the praescutum with three narrow dark brown stripes ; scutellum yellow with a conspicuous brownish black median vitta ; postnotum darkened ; pleura obscure brownish yellow, the dorsal pleurites vaguely darker ; knobs of halteres brownish black ; femora obscure yellow with a vague darker subterminal ring ; wings cream yellow, slightly darker around margin, with very conspicuous brown costal areas, those over origin of R_s and at stigma very large ; no brown spots along vein Cu ; Sc relatively long ; cell 1st M_2 elongate, exceeding any of the veins beyond it ; $m-cu$ close to fork of M ; male hypopygium with the dorsal dististyle lacking ; ventral dististyle very large and fleshy, its rostral prolongation slender,

with two decurved spines from a common tubercle, these spines fused basally or very closely approximated on their outer portion.

Male.—Length, excluding rostrum, about 6.5-7 mm.; wing 7.5-8 mm.; rostrum about 2.3-2.5 mm.

Rostrum relatively short, black. Antennae black throughout; flagellar segments oval; verticils relatively inconspicuous. Anterior vertex light grey, the colour vaguely continued caudad onto the dark brownish grey posterior portion of head; anterior vertex reduced to a narrow strip, less than the diameter of scape.

Pronotum obscure yellow, darkened laterally. Mesonotal praescutum obscure yellow, with three narrow dark brown stripes, the median vitta narrower than the laterals, subequal in width to the interspaces; lateral stripes widened behind and here more greyish, crossing the suture and broadly suffusing the scutal lobes, the latter area narrowly bordered mesally by more brownish black; lateral borders of scutal lobes and the median area of scutum yellow, the latter with vague indications of a darkened median vitta; scutellum yellow, with a very conspicuous brownish black median dash that does not reach the posterior border, parascutella pale brown; postnotum chiefly dark brown, paler along the suture between anepisternum and sternopleurite. Pleura chiefly obscure brownish yellow or reddish yellow, with indications of a darker dorso-longitudinal stripe extending from the propleura backwards, the exact limits difficult to determine because of damage caused by pinning. Halteres with stem yellow, knob brownish black. Legs with the coxae and trochanters yellow; femora obscure yellow with very vague indications of a darker ring about equal in extent to the yellow apex; tibiae and tarsi yellow, the terminal tarsal segments darkend. Wings (text-fig. 12a) with a weak brown tinge, the central portion of disk more cream



TEXT-FIG 12.—*Limonia (Geranomyia) cernua*, sp. nov.; a., venation; b., male hypopygium.

coloured; a heavy brown pattern, chiefly costal in distribution, arranged as follows: At *h*, continued caudad over the arcular region; at supernumerary crossvein in cell *Sc*, extending from *C* to *M*, narrower in cell *R*; a very extensive costal area from above origin of *Rs* to beyond fork of *Sc*, continuously darkened in cells *C* and *Sc* or very narrowly interrupted; in cell *R* following along *Rs* for about one-half the length of the vein, not reaching vein *M* behind; a further posterior extension in cell *R*₁ opposite fork of *Sc*, not quite reaching *Rs* behind; a further major darkening in region of the stigma, in extent subequal to the last

area, with a narrow posterior extension across cell R_3 before midlength ; beyond the stigma are further narrower areas at tip of R_{2+3} , continued caudad to vein R_{4+5} , and more diffusely at wing-tip ; cord and outer end of cell 1st M_2 more narrowly seamed with brown ; narrow brown marginal clouds at ends of longitudinal veins, especially *Cu*, 1st *A* and 2nd *A* ; veins obscure yellow, very slightly darker in the patterned areas. Costal fringe (male) short and inconspicuous. Venation : *Sc* relatively long, Sc_1 ending about opposite three-fifths *Rs*, Sc_2 at its tip ; a supernumerary crossvein in cell *Sc* ; *Rs* weakly angulated at origin ; cell 1st M_2 elongate, longer than any of the veins beyond it, more than twice as long as the distal section of M_4 ; *m-cu* close to fork of *M* ; vein 2nd *A* sinuous.

Abdominal tergites dark brown, the posterior borders of the segments broadly more greyish ; sternites reddish yellow ; hypopygium dark. Male hypopygium (text-fig. 12*b*) with the caudal margin of ninth tergite, 9*t*, broadly emarginate, the lateral lobes obtuse, slightly darkened, provided with numerous coarse setae. Basistyle, *b*, small, the ventromesal lobe short and stout, simple. Dorsal dististyle apparently lacking. Ventral dististyle, *vd*, large and fleshy, elongate, its total area about four or five times the basistyle ; rostral prolongation long and slender, at its base on upper face with a common tubercle bearing two strong confluent or very closely approximated spines that are bent cephalad across the face of the prolongation, one of the spines longer and a trifle stouter than the other, both acute at tips ; apex of prolongation a little dilated, provided with microscopic setae. Mesal-apical lobe of gonapophysis, *g*, appearing as a smooth, darkened, slightly curved horn.

Habitat.—British India (Punjab, Assam).

Holotype, ♂, Punjab, Dalhousie, stream next to Punj-pul Nallah, altitude 6,500 feet, May 8, 1927 (S. L. Hora). *Paratypes*, alcoholic ♂ ♀, in poor condition, Assam, Khasi Hills, Dümpep, October 2-18, 1929 (S. L. Hora).

By means of Brunetti's key to the species of British India (*Fauna*, etc., p. 388), the present fly runs to *Limonia* (*Geranomyia*) *semistriata* (Brunetti), which with the subsequently described *L. (G.) flaviventris* (Brunetti) and *L. (G.) poliophara* Alexander, and the fly described here-with as *L. (G.) fortibasis*, sp. nov., are the most similar species. The fly is readily told from all of the above with the exception of *fortibasis* by the structure of the male hypopygium, especially the loss of the dorsal dististyle. The three Oriental species possessing this character are *L. (G.) feuerborni* Alexander, of the Malayan Islands ; *L. (G.) fortibasis*, sp. nov. ; and the present fly ; all differ among themselves in the nature of the wing pattern and the details of structure of the male hypopygium.

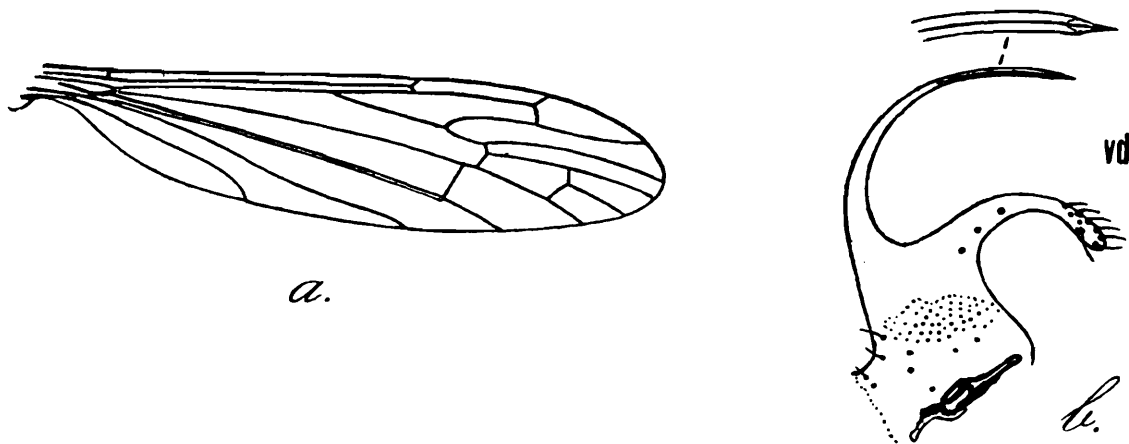
***Limonia (Geranomyia) fortibasis*, sp. nov.**

Male.—Length, excluding rostrum, about 6-7 mm. ; wing 6.5-8 mm. ; rostrum about 2.5-3 mm.

Female.—Length, excluding rostrum, about 6 mm. ; wing 7 mm. ; rostrum about 2.5-3 mm.

Very similar to *L. (G.) cernua*, sp. nov., differing especially in the details of structure of the male hypopygium.

Rostrum black throughout. Praescutal stripes narrow but relatively ill-defined; scutal lobes extensively darkened; median area of scutum and the scutellum obscure yellow, with a narrow dark brown median vitta; postnotum uniformly darkened. Pleura obscure yellow, the dorsal portions slightly more darkened. Femora light brown, the tips narrowly and vaguely yellow, without a distinct brown subterminal ring; tibiae and tarsi brown, the terminal tarsal segments darker. Wings (text-fig. 13a) with the dark pattern much as in *cernua*, the areas



TEXT-FIG. 13.—*Limonia (Geranomyia) fortibasis*, sp. nov.; a., venation; b., male hypopygium, details.

over origin of *Rs* and fork of *Sc* entirely separate. Venation: Cell 1st M_2 a little shorter; *m-cu* a short distance before fork of *M*, in cases this distance between one-third to one-fourth the length of *m-cu*.

Abdominal tergites dark brown, the sternites obscure yellow; hypopygium brownish yellow. Male hypopygium (text-fig. 13b) much as in *cernua* but differing conspicuously in the rostral prolongation of the ventral dististyle, *vd*. This latter is unusually wide across the base, the point of attachment with the main body of the style evidently very weak since this latter is broken and lost in almost all specimens examined; spines of the prolongation arising from a powerful base, the spines entirely fused and without trace of suture on basal half; on distal half the dividing suture is evident but to all intents and purposes there remains a single spine clear to the acute tip; spine from one-third to one-half longer than the length of the prolongation beyond it and not lying across the face of the prolongation, as in *cernua*; prolongation beyond the spine long and slender, gently curved, provided with several long setae at apex. Dorsal dististyle lacking, as in *feuerborni* Alexander and *cernua*, sp. nov.

Habitat.—Assam (Khasi Hills).

Holotype, alcoholic ♂, Dumpep, October 2-18, 1929 (S. L. Hora).

Allotopotype, ♀. *Paratopotype*, 1 broken ♂.

***Limonia (Geranomyia) gravelyana*, sp. nov.**

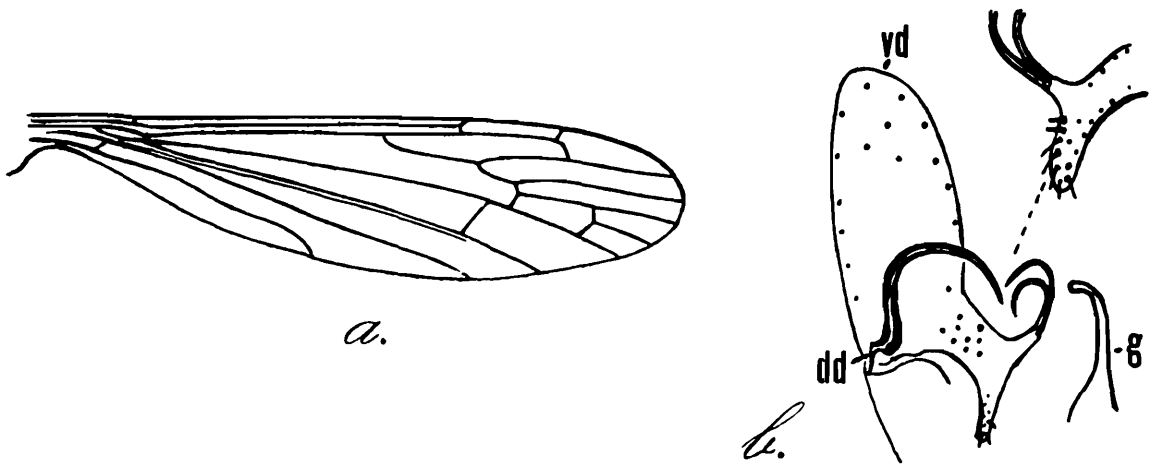
General colouration grey, the praescutum with a broad blackish median stripe; knob of halteres darkened; femora pale brown, tibiae and tarsi darker brown; wings weakly tinged with brown, unpatterned

except for the short-oval pale brown stigma ; costal fringe relatively long and dense ; *Sc* long ; male hypopygium with the dorsal dististyle long and strongly curved ; ventral dististyle very large and fleshy ; rostral prolongation bearing two strongly curved spines from a stout common tubercle ; mesal-apical lobe of gonapophysis long and slender, entirely pale.

Male.—Length, excluding rostrum, about 4.8-5.2 mm. ; wing 5-5.7 mm. ; rostrum about 1.9-2 mm.

Rostrum relatively long, dark brown throughout. Antennae short, black ; flagellar segments oval, relatively crowded. Head dark grey, the anterior vertex and a line of equal width back from it to the occiput clear light grey.

Pronotum blackish, grey laterally. Mesonotal praescutum grey, with the disk chiefly occupied by a very broad, more blackish stripe, this more pruinose behind and with indications of a paler median line in the holotype specimen ; lateral stripes lacking or fused with the central discal area ; posterior sclerites of notum dark grey. Pleura grey, vaguely patterned with darker grey. Halteres with stem pale, knob darkened. Legs with coxae dark, pruinose ; trochanters light brown ; femora yellowish brown to pale brown, unvariegated ; tibiae and tarsi darker brown. Wings (text-fig. 14a) with a weak brown tinge,



TEXT FIG. 14.—*Limonia (Geranomyia) gravellyana*, sp. nov. ; a., venation ; b., male hypopygium.

the prearcular field yellow ; stigma short-oval, pale brown ; veins brown. Costal fringe dense and relatively long. Venation : *Sc* long, *Sc*₁ ending a short distance before fork of *Rs*, *Sc*₂ at its tip ; *m-cu* variable in position, at the fork of *M* to almost one-half its length before this fork ; supernumerary crossvein in cell *Sc* not clearly evident in type specimens.

Abdominal tergites brownish black, including the hypopygium ; caudal borders of segments slightly paler ; basal sternites reddish brown, the fifth and succeeding segments blackened. Male hypopygium (text-fig. 14b) with the ventral dististyle very long and fleshy, in area very much exceeding the basistyle ; setae on surface small and sparse ; rostral prolongation, *vd*, stout basally, at apex narrowed into a compressed beak, at base of which on outer margin with a single strong tubercle bearing two strongly curved spines at its apex ; the tubercle is about one-third the length of the rostral prolongation beyond it and nearly one-third the length of the longest spine. Dorsal dististyle,

dd, an unusually long and strongly curved chitinized hook, the long drawn out tip acute. Mesal-apical lobe of gonapophysis, *g*, long and slender, gently curved, entirely pale.

Habital.—Eastern Himalayas (Darjiling District).

Holotype, ♂, Peshoke (Pashok) Spur, altitude 2,000-3,500 feet, April 23-May 11, 1915 (F. H. Gravely). *Paratopotype*, ♂.

The type material had been questionably determined by Brunetti (*Rec. Ind. Mus.* XV, p. 287, 1918) as being *Limonia (Geranomyia) genitilis* (Brunetti), which is identical with *L. (G.) fletcheri* (Edwards), both originally described in 1911 but with *fletcheri* having a slight priority. The present fly is entirely distinct from *fletcheri*, differing in all details of colouration of the body and wings, and especially in the structure of the male hypopygium. *L. (G.) fletcheri* has the rostral spines of the male hypopygium short and straight, from a short tubercle, the prolongation beyond them short and obtuse. I am very pleased to dedicate this fly to the collector, Dr. F. H. Gravely.

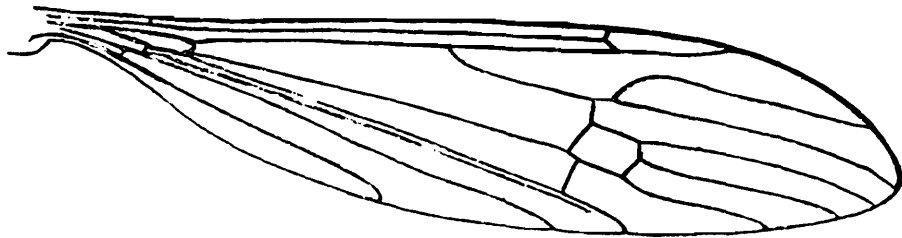
***Helius (Helius) boops*, sp. nov.**

General colouration of mesonotum dark brown, the sides of the praescutum broadly obscure yellow; knobs of halteres dark brown; wings subhyaline, sparsely patterned with brown; costal fringe and macrotrichia of veins short, *Rs* relatively long; cell 1st M_2 rectangular, with *m-cu* at near one-fourth to one-fifth its length; abdominal tergites reddish brown, sternites more yellow.

Female.—Length, including rostrum, about 8.6 mm.; wing 7.3 mm.; rostrum 0.6 mm.

Rostrum brown, subequal in length to the remainder of head; palpi dark. Antennae dark brown, broken beyond the base, the first flagellar segment a little shorter than the scape. Head brownish grey; eyes large; anterior vertex reduced to a narrow strip that is about one-half the diameter of scape.

Pronotum dark brown. Mesonotal praescutum dark brown medially, the broad lateral portions more obscure yellow, the lateral margins behind the pseudosutural foveae restrictedly more darkened; posterior



TEXT-FIG. 15.—*Helius (Helius) boops*, sp. nov.; venation.

sclerites of notum dark brown, the median region of scutum pale. Pleura pale reddish brown, the meral and dorsopleural regions paler. Halteres with stem yellow, knob dark brown. Legs with coxae brownish yellow to yellow; trochanters yellow; remainder of legs broken. Wings (text-fig. 15) subhyaline restrictedly patterned with brown, as follows: Arculus; origin of *Rs*; cord and outer end of cell 1st M_2 ; the narrow wing-tip; stigma oval, slightly darker brown; veins dark brown. Com-

pared with *longinervis*, costal fringe and macrotrichia of veins shorter ; wings longer and narrower, more pointed at apex. Venation : *Rs* relatively long ; *r-m* connecting with *Rs* about one-half its length before fork ; cell 1st M_2 more rectangular than in *longinervis*, *m-cu* at near one-fourth to one-fifth the length.

Abdominal tergites reddish brown ; sternites more yellow ; a narrow dark pleural stripe ; bases of ovipositor obscure yellow.

Habitat.—Assam (Khasi Hills).

Holotype, alcoholic ♀, Stream below Power House, Shillong, altitude about 5,000 feet, December 5, 1930 (H. S. Rao).

The nearest ally of the present fly is *Helius* (*Helius*) *longinervis* Edwards (Pahang-Java) which differs from the present species especially in colouration, venation and in the much longer macrotrichia of the wing veins. Edwards refers his species to the subgenus *Eurhamphidia* Alexander and from the position of the *r-m* crossvein before the fork of *Rs*, this assignment may well be more correct despite the very different general appearance of *longinervis* and *boops* from the normal type of *Eurhamphidia*.

Tribe PEDICIINI.

Dicranota (Rhaphidolabis) sordida (Brunetti).

1911. *Claduroides sordida*, Brunetti, *Rec. Ind. Mus.* VI, p. 290.

1912. *Rhaphidolabis indica*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, p. 519, pl. x, fig. 15.

Punjab, Dalhousie, stream next to Punj-pul Nallah, altitude 6,500 feet, May 8, 1927 (S. L. Hora) ; Dalhousie, round about Hurst Cottage, Bakrota Hill, altitude 7,000 feet, May-June 1927 (S. L. Hora). Brunetti's types were from Simla and vicinity. Without an actual study of the holotype, the present determinations are as safe as is possible.

Tribe HEXATOMINI.

Limnophila raoana, sp. nov.

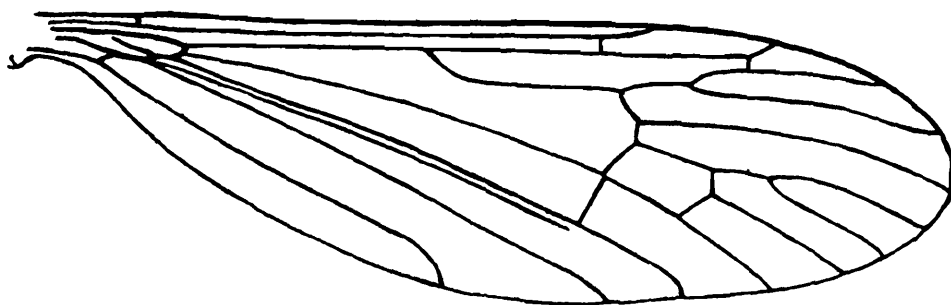
General colouration of head, thorax and abdomen dark brown to brownish black ; antennae with scape and pedicel black, flagellum brown ; flagellar segments provided with an abundant pale pubescence and elongate verticils ; anterior vertex wide ; halteres black throughout ; femora black, the tips narrowly but abruptly and conspicuously yellow ; tibiae and tarsi yellow ; legs provided with long conspicuous setae ; wings with the very restricted ground, whitish subhyaline, very heavily patterned with brown, especially dense in the radial field where the ground is reduced to linear transverse dashes ; *Sc* long ; R_{2+3+4} unusually long, about one-third *Rs* ; *m-cu* very close to the fork of *M* ; cerci black, the tips paling to horn-yellow.

Female.—Length about 8.5 mm. ; wing 7.7 mm.

Rostrum and palpi black. Antennae with scape and pedicel black, flagellum brown ; scape elongate ; pedicel relatively stout, about twice as long as thick ; flagellar segments subcylindrical to elongate-oval, with truncate ends, provided with a dense erect pale pubescence and

elongate verticils, the longest of these latter unilaterally distributed, exceeding the segments in length. Head with anterior vertex wide, exceeding twice the diameter of scape; eyes protuberant (possibly due to the position in mounting), with relatively coarse ommatidia; head dark brown.

Thorax almost uniform dark brown, the praescutum without distinct stripes; setae of praescutal interspaces sparse but elongate, black. Pleura uniformly dark brown. Halteres black throughout. Legs with coxae brownish black; trochanters dark brown; femora black, the tips narrowly but abruptly and conspicuously yellow; tibiae and tarsi yellow, the terminal tarsal segments darkened; legs with very long coarse setae, black on the femora, yellow on the tibiae and tarsi; tibial spurs black, long and conspicuous, hairy; claws slender, simple. Wings (text-fig. 16) with the very restricted ground colour, whitish subhyaline,



TEXT FIG. 16.—*Limnophila raoana*, sp. nov.; venation.

chiefly obliterated by unusually heavy brown markings, in the radial field restricting the pale ground to linear transverse lines and dashes; in cells basad of cord and in outer medial and cubital fields the pale ground areas more numerous, more nearly equal in extent to the dark spots; two major dark spots along vein *2nd A*, one at apex, the second beyond midlength; cells *C* and *Sc* with series of dark spots and dashes; veins dark brown, *C* pale yellow except where variegated by dark dashes. Costal fringe moderately long and conspicuous. Venation: *Sc* long, *Sc*₁ ending about opposite midlength of *R*₂₊₃₊₄, *Sc*₂ a short distance removed from its tip; *Rs* arcuated at origin, nearly three times the long *R*₂₊₃₊₄; *R*₁₊₂ relatively short, from one-third to one-half times *R*₂₊₃; cell *M*₁ about twice its petiole; cell *1st M*₂ rectangular, with *m-cu* very close to the fork of *M*, in one wing about one-fifth its length beyond the fork, in the opposite wing even closer to the fork; anterior arcus present; vein *2nd A* elongate, extending generally parallel to the anal border of wing.

Abdomen brownish black to black, the genital segment narrowed; valves of ovipositor blackened, the distal half of cerci paling to horn-yellow; cerci long and slender, gently upcurved.

Habitat.—Bombay Presidency (North Kanara District).

Holotype, ♀. Hill stream on Jog-Sagar Road, November 30, 1928 (H. S. Rao).

This distinct species is named in honour of the collector, Dr. H. S. Rao. There are several allied forms in the Oriental fauna, including *Limnophila bivittata* Edwards, *L. multipunctata* Brunetti, *L. pendleburyi* Edwards and *L. senior-whitei* Alexander. The present fly differs

from all of these by the colouration of the body and legs, by the unusually heavy dark pattern of the wings, and by the position of *m-cu* close to the fork of *M*, in this latter respect suggesting species of the genus *Dactylolabis* Osten Sacken. I had formerly believed that certain of these species more properly fell in *Pseudolimnophila* Alexander but since the anterior arculus is preserved in all and other characters fail to agree, it seems best to place them all in *Limnophila* Macquart until the Oriental species of the group are better known.

***Limnophila manipurensis*, sp. nov.**

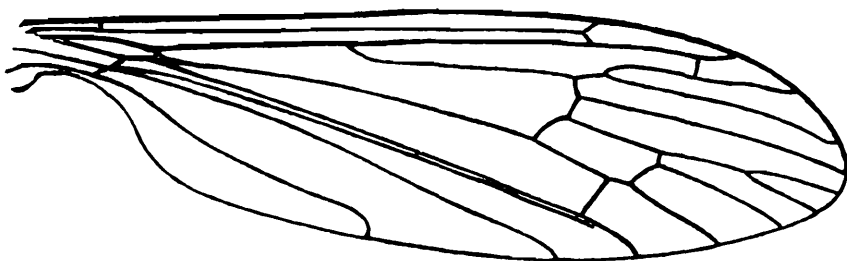
General colouration dark, sparsely grey pruinose; praescutum with three darker brown stripes; scutellum with a dark median vitta; antennae short, basal segments short and crowded, flagellum yellow; halteres obscure yellow; legs with femora yellow, the tips rather narrowly blackened; tips of tibiae narrowly darkened; legs provided with long conspicuous setae; wings yellow, spotted and very abundantly dotted with brown; *R*₂ very faint, placed near midlength of the pale yellow stigma; *m-cu* lying very far distad, about four-fifths the length of cell 1st *M*₂.

Female.—Length about 10 mm.; wing 10 mm.

Rostrum and palpi brown. Antennae with scape black, relatively short; pedicel dark brown; flagellum obscure yellow, the outer segments more darkened; antennae short, basal flagellar segments short and crowded, the first flagellar segment with a short basal pedicel, the succeeding segments closely applied to one another; fifth and following segments becoming more elongate and provided with long verticils, on the outer segments being nearly three times as long as the segments themselves; terminal segment elongate, exceeding twice the penultimate. Head dark brown.

Pronotum dark brown, relatively massive. Mesonotal praescutum brownish grey, with three somewhat conspicuous brown stripes, the median one more or less divided by a pale central line, narrowed and entire before the suture; lateral stripes more distinct and more or less confluent at their anterior ends with the median vitta, obliterating the interspaces at this point; suture conspicuously darkened medially; scutum grey each lobe variegated with a dark brown area, the broad median region with vague indications of a capillary dark line; scutellum dark grey, with a conspicuous median brown vitta, parascutella dark; postnotum dark grey, the mediotergite more darkened posteriorly. Pleura chiefly brownish black, more or less pruinose. Halteres obscure brownish yellow, the knob weakly darkened. Legs with the coxae dark brown; trochanters brownish yellow; femora yellow, the tips rather narrowly but conspicuously blackened; tibiae yellow, the tips very narrowly dark brown; tarsi yellow, the tips of the first three segments narrowly and vaguely darkened; terminal two segments darkened; legs with long conspicuous setae, especially long and outspreading on tibiae and tarsi; tibial spurs elongate. Wings (text-fig. 17) with the ground colour yellow, spotted and very abundantly dotted with brown; major dark areas at origin of *Rs*; along cord, beginning as a relatively small spot at proximal end of the otherwise pale stigma;

smaller dark marginal areas at ends of veins R_3 and R_4 ; the brown dots include all cells, in the outer and posterior fields somewhat larger



TEXT FIG. 17.—*Limnophila manipurensis*, sp. nov.; venation.

and tending to become confluent; tip of vein *2nd A* with a small darkened area; veins yellow, darker in the patterned areas. Costal fringe relatively long and abundant but subappressed. Venation: *Sc* long, Sc_2 longer than Sc_1 , ending a short distance before end of R_{2+3+4} ; R_2 very faint to subatrophied, at near midlength of the pale stigma; cell M_1 subequal in length to or a little shorter than its petiole; *m-cu* lying unusually far distad, about four-fifths the length of the cell, the distal section of M_{3+4} only about one-half *m-cu* and much shorter than the basal section of M_3 ; cell *2nd A* wide; anterior arcus preserved.

Abdomen dark brown, indistinctly variegated with more reddish areas; genital segment dark; valves of ovipositor horn-yellow; cerci elongate, only gently upcurved near tips, the latter acute.

Habitat.—Assam (Manipur).

Holotype, ♀, Thanga Island, Loktak Lake, at light, February 1920 (Manipur Survey).

Limnophila manipurensis is readily separated from other related forms listed under the preceding species by the details of colouration of the body, legs and wings, and especially by the venation, in the unusual position of *m-cu* far out toward the end of cell *1st M*₂.

Tribe ERIOPTERINI.

Teucholabis (Teucholabis) angusticapitis Brunetti.

1918. *Teucholabis angusticapitis*, Brunetti, *Rec. Ind. Mus.* XV, p. 305, pl. viii, fig. 11 (head).

1919. *Teucholabis nocticolor*, Edwards, *Journ. Fed. Malay States Mus.* VIII, pp. 18, 19, pl. iii, fig. 6 (hypopygium); pl. iv, fig. 13 (wing).

The Holotype, ♂, Regd. No. 8520/H2, was from above Tura, Garo Hills, Assam, altitude 3,500-3,900 feet, August 1917 (S. W. Kemp).

Male.—Length about 7 mm.; wing 7.6 mm.

Head long and narrow, as mentioned by Brunetti; rostrum more than one-half the remainder of head. Antennae dark brown. Head pruinose.

Pronotum relatively conspicuous. Thorax blackish, the cephalic portion of praescutum paler, more reddish brown. Pleura and postnotum sparsely pruinose. Halteres dusky, including the knobs. Legs blackish, with relatively conspicuous black setae. Wings blackish, with two narrow whitish crossbands, as described. Venation: *Sc*

relatively long, Sc_1 ending a short distance before the fork of R_s ; R_s relatively short, straight; R_2 a little shorter than R_{2+3+4} ; cell $1st\ M_2$ relatively small, subrectangular, shorter than vein M_3 beyond it; $m-cu$ nearly its own length beyond fork of M , only about one-fourth the length of distal section of Cu_1 .

Abdomen black throughout; sternal pocket present.

Edwards (*Rec. Ind. Mus.* XXVI, p. 300, 1924) places his *nocticolor* as a synonym of *angusticapitis*. It should be noted in this insect as well as in most others described by Brunetti that his measurements of the body length are under the actual dimensions.

Teucholabis (Teucholabis) pruthiana, sp. nov.

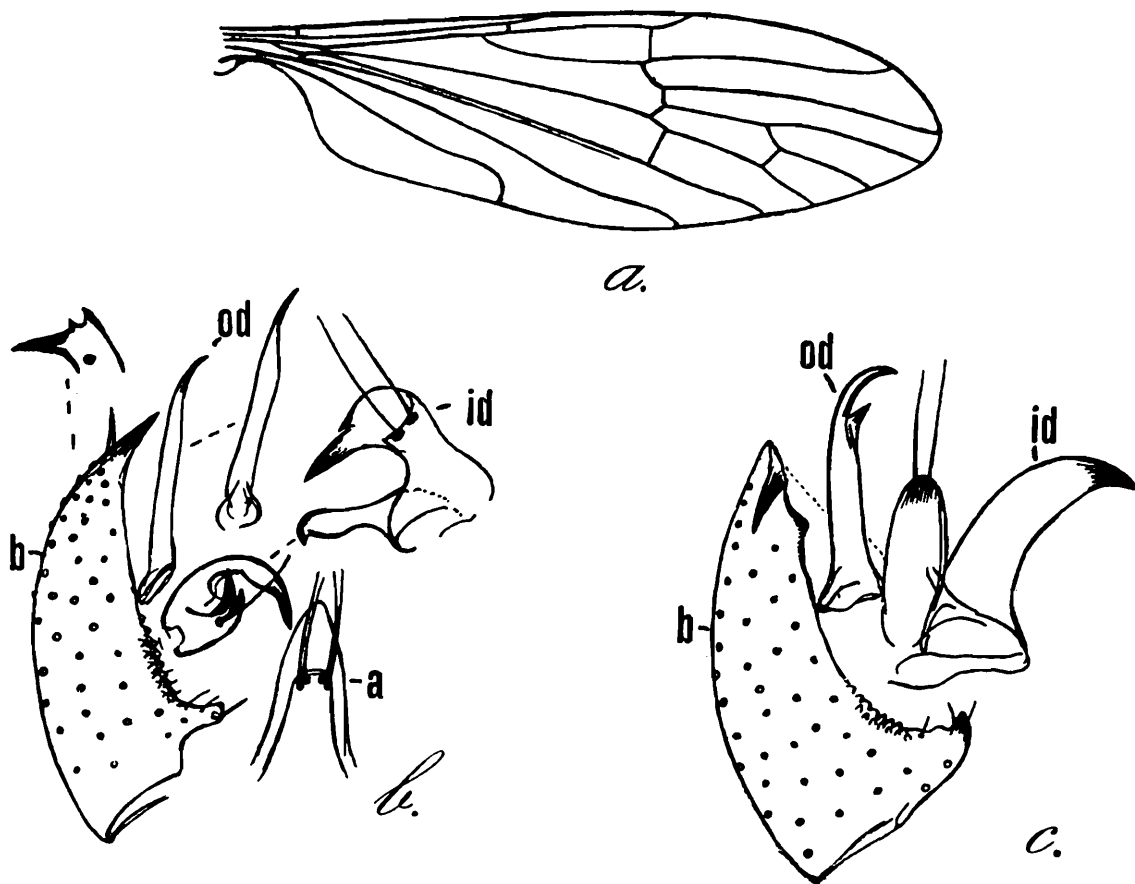
General colouration of mesonotum polished black, the humeral region of praescutum, the suture, the broad median region of scutum and the scutellum yellow; pleura black, the dorsal sternopleurite and meral region yellow; femora yellow, the tips broadly black, most extensive on the fore legs; wings yellow, restrictedly patterned with pale brown and darker brown, including a broken crossband at level of origin of R_s and a complete band at the cord; wing-tip broadly paler brown; abdomen dark brown, the incisures rather narrowly yellow; subterminal segments uniformly yellow, the styli of hypopygium dark; male hypopygium with the outer dististyle simple; inner dististyle with two arms that terminate in blackened points.

Male.—Length about 7.5 mm.; wing 6.5 mm.

Rostrum black, relatively long and slender, subequal in length to remainder of head; palpi and mouthparts black. Antennae black; basal flagellar segments short-oval, the segments passing through oval, the outer ones long oval; verticils subequal in length to the segments. Head black.

Pronotum orange yellow. Mesonotal praescutum polished black, the humeral triangles extensively yellow, the suture and vicinity more narrowly but continuously yellow; scutum with lobes polished black, the broad median area and the scutellum yellow; parascutella black; postnotum black. Propleura black. Mesopleura broadly black above and on the ventral sternopleurite, the dorsal sternopleurite and meral region yellow, the pleurotergite and metapleura black. Halteres with stem blackened, knob light yellow. Legs with coxae and trochanters yellow; femora yellow, the tips broadly blackened, on the fore pair including about the distal two-fifths, narrower on the middle and posterior legs where the outer fourth to fifth is blackened; tibiae dark brown, the tips narrowly blackened; tarsi black. Wings (text-fig. 18a) with the ground colour yellow, restrictedly patterned with pale brown and darker brown, the darker areas appearing as a broken crossband at level of origin of R_s , including dark clouds at origin of R_s and end of vein $2nd\ A$, the band much paler brown in the intervening cells; a second dark band at cord, beginning at the oval, darker brown stigma, extending to vein Cu ; the paler brown areas include the broad wing apex and narrower posterior margin, the former extending basad to the general level of outer end of cell $1st\ M_2$, the latter including the outer ends of cells M_4 to $2nd\ A$, inclusive, the base and axillary region remaining pale; cell

C yellow, *Sc* brown; veins brown. Costal fringe relatively short and dense. Venation: *Sc* of moderate length, *Sc*₁ ending near two-fifths the length of *Rs*, *Sc*₂ a little closer to origin of *Rs* than to tip of *Sc*₁.



TEXT FIG. 18.—*Teucholabis* (*Teucholabis*) *pruthiana*, sp. nov.; *a.*, venation; *b.*, male hypopygium; *c.*, male hypopygium of *T. (T.) annuloabdominalis* Senior-White (right) shown for comparison.

Abdomen dark brown, the incisures rather narrowly yellow, including the narrow apical borders of the segments and the subequal extreme base of the succeeding segments; segments eight and nine yellow, the styli of the male hypopygium brownish black. Sternal pockets well-developed, especially the major one on fifth segment; this latter pocket is much larger than in *annuloabdominalis*, occupying most of the width of the segment, with the setae more numerous and differently distributed. Male hypopygium (text-fig. 18*b*) with the apical lobe of basistyle, *b*, bispinous; mesal flange consisting of numerous low triangular points and interpolated setae, at cephalic end of flange produced into a more elongate lobe. Outer dististyle, *od*, a simple slender rod, the narrowed tip acute. Inner dististyle, *id*, bifid; the arm bearing the two elongate setae produced into two blackened spinous points, the more elongate simple arm more or less narrowed to a blackened point. Aedeagus, *a*, bearing four elongate setae on shorter lobe.

In *annuloabdominalis* (text-fig. 18*c*), the apical lobe of basistyle, *b*, extended into a single spine. Outer dististyle, *od*, stouter, the apical spine gently curved, bearing a shorter lateral spine before apex. Inner dististyle, *id*, of entirely different conformation, the arm bearing the two elongate setae shorter, simple, obtuse at apex; simple arm longer, appearing as a cultriform blade, the acute apex blackened.

Habitat.—South India (Palni Hills).

Holotype, ♂, Muliar, below Kodaikanal, altitude about 5,000 feet, July 1-3, 1929 (H. S. Pruthi); Eastern Ghats Survey.

I take very great pleasure in dedicating the species to the collector, Dr. Hem Singh Pruthi. The nearest ally is *Teucholabis* (*Teucholabis*) *annuloabdominalis* Senior-White, of Ceylon, which differs in the details of colouration of the thorax, legs and wings, in the broader yellow abdominal rings, and, especially, in the structure of the male hypopygium.

***Gonomyia* (*Lipophleps*) *ornatipes* (Brunetti).**

1912. *Dicranomyia ornatipes*, Brunetti, *Fauna Brit. India, Dipt. Nemat.*, p. 380, pl. vii, fig. 10 (wing).

One ♂ Coimbatore, South India, September 2, 1938 (Susai Nathan); one ♂ Nedungadu, Tanjore District, February 17, 1938 (Susai Nathan). Edwards had considered this species as being a synonym of the earlier described East Indian *Gonomyia* (*Lipophleps*) *pilifera* (de Meijere), but in my opinion the two flies are quite distinct though belonging to the same group of species which has been named the *pilifera*-group.

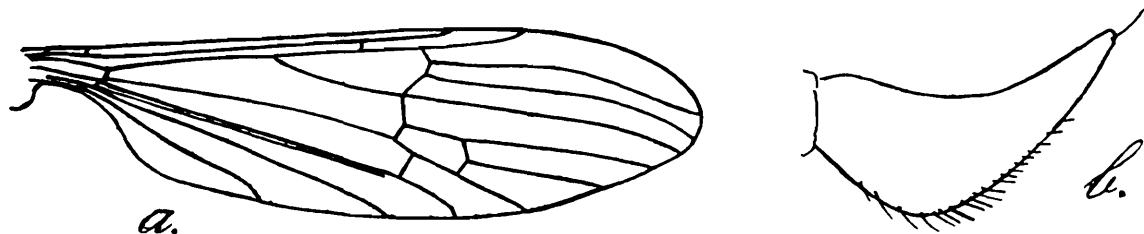
***Gnophomyia* (*Gnophomyia*) *klossiana*, sp. nov.**

General colouration dark brown; pleura brownish black, the ventral pteropleurite and meral region more brownish yellow; antennae relatively elongate, black; legs dark brown to brownish black; wings with a weak brown tinge, the large diffuse stigma conspicuously darker brown; R_s in direct longitudinal alignment with R_5 ; $r-m$ at end of R_s ; R_{2+3+4} unusually erect, R_{2+3} subperpendicular, only a little longer than R_2 alone; cell R_2 at margin very extensive, approximately six or seven times as wide as cell R_3 ; cell 1st M_2 relatively small; abdominal tergites brownish black; ovipositor yellow, the cerci strongly compressed.

Female.—Length about 5 mm.; wing 5.4 mm.

Rostrum and palpi black. Antennae with scape and pedicel dark brown; flagellum black; flagellar segments cylindrical, relatively elongate in the female sex; longest verticils nearly equal in length to the segments, appressed. Head brownish black.

Mesonotum almost uniformly dark brown. Pleura chiefly blackened, the propleura, ventral pteropleurite and meral region more brownish yellow; pleurotergite brownish black. Halteres with stem dusky, knob dark brown. Legs with coxae and trochanters reddish brown;



TEXT FIG. 19.—*Gnophomyia* (*Gnophomyia*), *klossiana*, sp. nov.; a., venation; b., ovipositor.

remainder of legs dark brown to brownish black; tarsi considerably shorter than tibiae. Wings (text-fig. 19a) with a weak brownish tinge,

the large diffuse stigma conspicuously dark brown; veins dark brown. Costal fringe long and conspicuous. Venation; R_s in direct longitudinal alignment with R_5 ; R_{2+3+4} unusually erect, R_{2+3} even more so, only a little exceeding R_2 alone; $r-m$ at end of R_s ; veins R_3 and R_4 unusually long and extending generally parallel to one another, the cell being a trifle wider about midlength; cell R_2 at margin very extensive, being from six to seven times that of cell R_3 ; cell 1st M_2 relatively small, subequal in length to vein M_4 beyond it; $m-cu$ about one-third the length of cell 1st M_2 ; cell 2nd A of moderate width only.

Abdominal tergites brownish black, the basal sternites more reddish brown. Ovipositor (text-fig. 19b) with the cerci light yellow, appearing as very compressed blades, widest on basal half, the upcurved distal portion strongly narrowed, the ventral margin with long setae.

Habitat.—Federated Malay States (Selangor-Pahang Boundary).

Holotype, ♀, Ginting Bidai, altitude 2,000 feet, April 1917 (C. Boden Kloss).

From the numerous oriental species of the genus that center about *Gnophomyia* (*Gnophomyia*) *orientalis* de Meijere and *G. (G.) strenua* Brunetti, the present fly is most readily told by the venation, especially the unusually precipitous veins R_{2+3+4} and R_{2+3} , and by the unusual marginal extent of cell R_2 . The strongly compressed-flattened ovipositor is likewise somewhat different from the usual type found in the genus.

***Styringomyia kempiana*, sp. nov.**

General colouration dark grey, the praescutum bordered in front and on sides by a narrow black line; pronotum, posterior border of scutellum and a capillary median vitta on postnotum obscure yellow; pleura black, sparsely pruinose; halteres uniformly brownish black; femora brownish black, the fore and middle pair with a very narrow, obscure yellow, subterminal ring, the posterior femora with this ring much more diffuse; tibiae brownish black, the fore and middle pair with the bases and a subterminal ring obscure yellow; posterior tibiae uniformly darkened; wings with a strong brownish yellow tinge; vein 2nd A curved to the wing margin, without angulation or spur; male hypopygium with the basistyle terminating in three strong spinous bristles; inner arm of dististyle very large, oval, provided with abundant long retrorse setae.

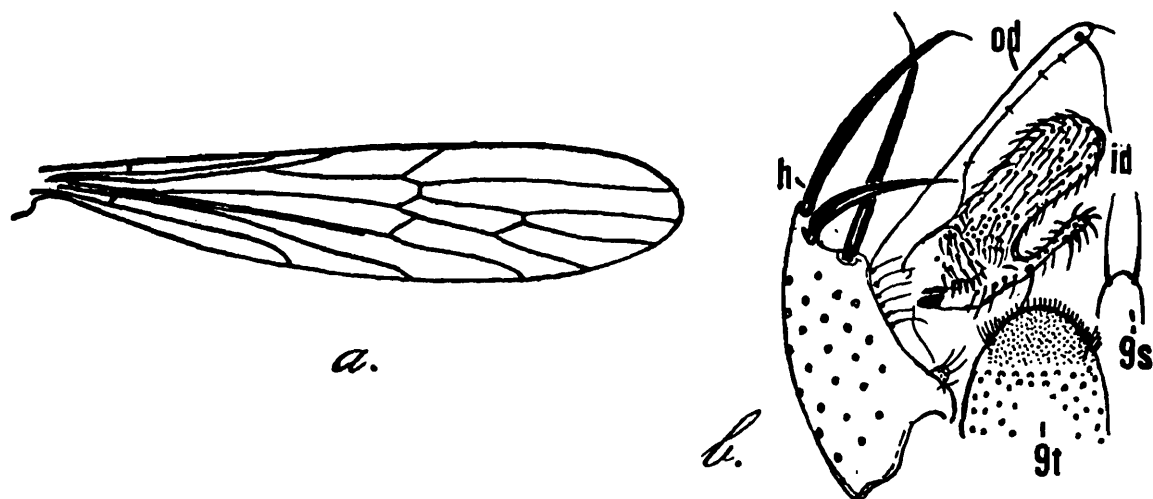
Male.—Length about 6.5 mm.; wing 4.3-4.4 mm.

Female.—Length about 6 mm.; wing about 4 mm.

Rostrum and palpi black. Antennae with scape dark, grey pruinose; pedicel brown, flagellum obscure yellow, the outer segments more darkened; flagellar segments long-oval, the outer ones becoming even more attenuated; terminal segment shorter than the penultimate. Head light brown; setae delicate.

Pronotum obscure yellow, darkened and impressed medially. Mesonotum chiefly dark grey, the praescutum bordered in front and on sides by a narrow black line, the usual interspaces less distinctly darkened; posterior sclerites of notum blackened, pruinose, the scutal lobes slightly darker; posterior border of scutellum and a capillary median vitta on postnotum obscure yellow. Pleura black, sparsely pruinose. Halteres

uniformly brownish black. Legs with coxae brown; trochanters brownish yellow; femora brownish black, the bases restrictedly paler; fore and middle femora with a very narrow, obscure yellow ring placed some three times its length before the tip, the posterior femora with the ring indicated but much more diffuse; fore and middle tibiae brownish black, the very narrow bases and a narrow ring about two-thirds the length obscure yellow; posterior tibiae uniformly dark brown; tarsi brownish black, the proximal ends of basitarsi slightly paler, on the posterior legs with both the first and second segments somewhat more obscure yellow, the outer segments blackened. Wings (text-fig. 20a) with a strong brownish yellow tinge, without pattern, a little clearer



TEXT FIG. 20.—*Styringomyia kempiana*, sp. nov.; a., venation; b., male hypopygium.

in the prearcular field and just beyond; veins brown. Costal fringe long and conspicuous. Venation: Anterior branch of R_s oblique, from two to four times the basal section of R_5 ; cell 2nd M_2 broadly to narrowly sessile; vein 2nd A evenly curved into the margin, without angulation or spur.

Abdomen elongate in male; basal segments blackened, succeeding segments pale brown or brownish yellow, narrowly blackened laterally, the posterior borders of the individual segments much less distinctly so; hypopygium and preceding segments more uniformly brownish black; abdomen with long conspicuous black, setae. Female with abdomen more uniformly darkened, possibly due to discolouration; genital segment dark brown, terminating in unusually slender black lobes, each tipped with two long setae. Male hypopygium (text-fig. 20b) with the ninth tergite, $9t$, broad, terminating in a semicircular cushion; ninth sternite, $9s$, with the two terminal bristles relatively weak. Basistyle, h , terminating in three strong spinous bristles, two of which are produced into hair-like points. Outer arm of dististyle, od , entirely pale, dilated on basal third, at apex bearing one very small and one very long bristle; margin of arm with about four small setae extending to the dilated basal portion. Inner arm of dististyle, id , an oval lobe with a slender lateral arm, both with abundant long black setae, the slender arm with two more spinous bristles of larger size.

Habitat.—Southwest India (North Kanara District).

Holotype, ♂, Castle Rock, October 11-26, 1916 (S. W. Kemp).

Allotype, ♀, Talewadi, near Castle Rock, October 3-10, 1916 (S. W. Kemp). *Paratopotypes*, 2 broken ♂♂, with the type. Only the Holotype is in a well-preserved state.

This conspicuous species is named in honour of the collector, Dr. Stanley W. Kemp, who has added vastly to our knowledge of the insect fauna of British India. Except for the ringed tibiae, the present fly runs to the group of species including *Styringomyia flava* Brunetti and *S. solocipennis* Enderlein, all having three conspicuous spinous setae on the basistyle of the male hypopygium. It differs from all previously described species by the colouration of the body and legs, and, especially, the structure of the male hypopygium. Edwards placed *S. obscura* Brunetti in this same group of species having trispinous basistyles and in all probability it belongs to this group but since the species seems still to be known only from the unique type (a female from Nepal), it may be that the male hypopygium will not be found to conform to this group.

***Styringomyia susilae* sp. nov.**

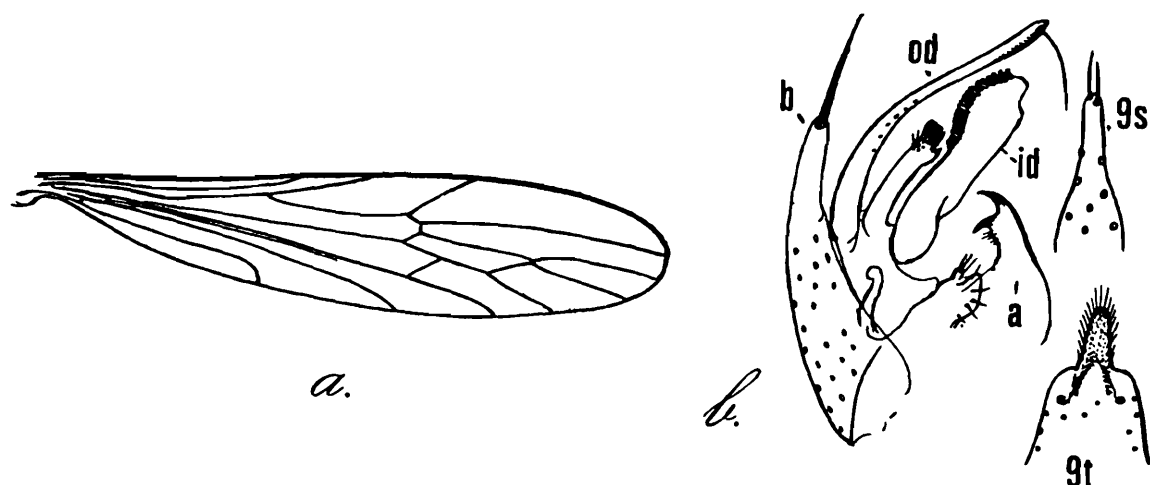
General colouration yellow, the mesonotum patterned with black, including two circular spots placed laterally on the suture; praescutum behind with a central pale line bordered laterally by black, the pale vitta continued caudad across the suture on to the scutellum; pleura uniformly pale; dark rings on legs very reduced, the posterior femora being unpatterned; all tibiae abruptly tipped with black; tarsi yellow, the terminal segment blackened; wings yellow, restrictedly patterned with dark brown, the chief area being a cloud over *r-m*; vein *2nd A* without angulation or spur; abdominal pattern pale and reduced; male hypopygium with both tergal and sternal lobes very narrow, especially the former; dististyle with inner lobe large, its margin bearing a linear series of about 18 to 20 blackened spinous points.

Male.—Length about 6.5-7 mm.; wing 4.4-4.6 mm.

Rostrum obscure yellow; palpi brownish yellow. Antennae with basal segments obscure yellow, the scape more or less infuscated; outer flagellar segments weakly bicoloured, the apices a little brighter yellow than the bases. Head yellow, with normal slender setae.

Pronotum and mesonotum yellow, the latter with a pale to whitish median stripe that is indicated especially by the blackened lateral borders, these becoming wider and more evident at cephalic ends, the pale median vitta crossing the suture and scutum on to the scutellum; near lateral ends of suture a conspicuous circular black spot occupies parts of both praescutum and scutum; posterior sclerites of notum chiefly brownish yellow; posterior borders of scutal lobes each with an infuscated area; pleura yellow. Halteres yellow. Legs with the coxae and trochanters yellow; femora yellow, the usual dark rings very incomplete to scarcely indicated, on fore and middle legs appearing as weak clouds on the upper surface only, on the posterior femora quite lacking; tibiae yellow, the tips of all pairs narrowly but very conspicuously black; tarsi very pale yellow to whitish yellow, only the last segment abruptly blackened, the tips of other segments not darkened. Wings (text-fig. 21a) strongly yellow, the costal border, especially in the outer radial field, more saturat-

ed yellow ; a restricted dark brown cloud at *r-m* and less distinct very narrow seams and darkenings of the veins at outer end of cell *1st M*₂, *m-cu*, and distal third or more of *2nd A* ; remaining veins uniformly yellow, including their tips. Venation : Anterior branch of *Rs* normally oblique ; cell *2nd M*₂ very short-petiolate to narrowly sessile ; vein *2nd A* curved evenly but rather strongly into the border, not angulated or spurred.



TEXT FIG. 21.—*Styringomyia susilae*, sp. nov. ; a., venation ; b., male hypopygium.

Abdomen yellow, the dark pattern very restricted, appearing as paired brown dots at the posterior borders of the tergites, on the seventh segment with an additional median basal streak ; sternites unpatterned ; hypopygium yellow. Male hypopygium (text-fig. 21b) with the ninth tergite, *9t*, terminating in an unusually narrow apical lobe that is narrower than the lobe of the ninth sternite, this lobe provided with long abundant setae, subtended on either side by glabrous shoulders. Ninth sternite, *9s*, long and narrow, the setae relatively weak, one placed slightly more distad than the other. Basistyle, *b*, terminating in a long lobe that bears a single strong spinous seta that is subequal in length to or a trifle longer than the lobe itself. Dististyle with outer arm, *od*, slender, strongly blackened along lower border at tip ; setae two, the outer one unusually reduced, the longer seta of normal length ; face of arm with six or seven scattered setae but with no spinous points ; intermediate and inner arms of dististyle as figured, the intermediate arm more slender but elongate, tipped with six to eight short but strong black spines in a compact mass, with a group of normal setae immediately basad ; inner arm, *id*, a little longer and wider, appearing as a flattened blade, the outer margin with a row of blackened blunt-tipped spines, totalling 18 to 20, arranged in a close linear series. Aedeagus, *a*, terminating in two pairs of blackened acute spinous points.

Habitat.—South India (Southern Malabar).

Holotype, ♂, Walayar Forest, altitude 2,000 feet, August 8, 1938 (Susai Nathan). *Paratopotypes*, several ♂♂ with the type. Paratypes in collection of Indian Museum.

I am pleased to name this species after Miss Susila Nathan, the infant daughter of Mr. Susai Nathan, to whom I am indebted for several interesting species of Tipulidae from Malabar. By Edwards' key to the then known species of the genus (*Trans. Ent. Soc. London*, pp. 210-212, 1914)

Styringomyia susilae runs to *S. jacobsoni* Edwards, of Java, a very different species. The slenderness of the simple apical lobe of the ninth tergite suggests *S. fryeri* Edwards, which is likewise entirely distinct from the present fly. The chief characteristics for the separation of *susilae* from its allies, aside from hypopygial differences, lie in the very reduced dark pattern of the legs and in the somewhat peculiar pattern of the mesonotum.